

Research on the Construction of Compulsory License System for Green Technology Patent in China

QIN Qian^{[a],*}; REN Yanying^[a]

^[a] Shanxi University, Taiyuan, China.
*Corresponding author.

Received 11 December 2022; accepted 3 February 2023
Published online 26 March 2023

Abstract

The wide application of green technologies is an important support and necessary path for climate change mitigation, carbon reduction and green transition. In order to promote the rational and effective application of green technologies under the protection of patent system, it is necessary to carry out the corresponding compulsory license of green technology patent. However, there are still insufficient legal norms for compulsory license of green technology Patent. The existing rules are difficult to break the negative effects of the double-edged sword of compulsory license of green technology patent on the interests of the right holders and innovation incentives. By studying the balance of the rights and interests of each subject of compulsory license of green technology patent, the balance mechanism of the interests of compulsory green technology patent license promoting green technology innovation and ecological environment protection is explored. In terms of specific rules, it is suggested to build a green technology directory and database, consider the preconditions of environmental public interests and establish the “three elements” test standards.

Key words: Green technologies; The patent system; Compulsory License; Balance of interests

Qin, Q., & Ren, Y. Y. (2023). Research on the Construction of Compulsory License System for Green Technology Patent in China. *Higher Education of Social Science*, 24(1), 18-24. Available from: URL: <http://www.cscanada.net/index.php/hess/article/view/12970>
DOI: <http://dx.doi.org/10.3968/12970>

1. INTRODUCTION

Green technologies, also known as environmentally sound technologies¹, has been defined and analyzed in *Agenda 21*, a document formed by the United Nations Conference on Environment and Development, and has been widely recognized and applied. Green technologies protect the environment, reduce pollution, use all resources in a more sustainable way, recycle more waste and products, and dispose of surplus waste in a more acceptable manner than the technologies they replace. It can also be said that in the context of pollution, green technologies are “process and product technology” that produce little or no waste to prevent pollution, and “end-of-the-pipe” technologies that cover the treatment of pollution when it occurs.² Since the age of industrial civilization, in the process of the high development of productivity, human beings have been using science and technology to exploit natural resources in a predatory manner, resulting in a series of ecological crises. The emergence and application of green technologies is the turning point to solve the environmental crisis, which has been paid full attention in the world and our country. In December 2020, the Secretary-General of the United Nations called for a global climate emergency, requiring all member states to undertake corresponding emission reduction plans within their respective capabilities (Shang, 2020). This initiative urges all member states to fulfill their corresponding low-carbon emission reduction obligations. In order to achieve a carbon-neutral future, sustainable development-oriented green innovation has been actively promoted

¹ Green Technologies is defined by the environmentally sound technologies in WIPO-GREEN Platform of the World Intellectual Property Organization. See WIPO - GREEN’s official website, <https://www3.wipo.int/wipogreen/en/>.

² See sections 34.1 and 34.2 of Chapter 34 of Agenda 21 of the United Nations Conference on Environment and Development, “Environmentally sound technologies Transfer, cooperation and capacity-building”.

globally (Schiederig, Tietze, & Herstatt, 2012). From the perspective of our country, Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the People's Republic of China formulated by the Central Committee of the Communist Party of China puts forward the social development goal of "supporting the construction of ecological civilization with technology" (Liu, 2020). The CPC Central Committee and The State Council issued Action Plan for Carbon Dioxide Peaking Before 2030, which emphasizes tackling key low-carbon, zero-carbon and carbon-negative core technologies and accelerating the transformation of green technology innovation achievements. In order to promote the supporting role of science and technology in carbon peaking and carbon neutrality, the Ministry of Science and Technology, the National Development and Reform Commission and other government ministries and commissions jointly formulated The Implementation Plan for Carbon Peaking through Science and Technology (2022-2030), pointing out that a more complete green and low-carbon scientific and technological innovation system should be established. To promote the industrialization of green patent technology and solve the problem of insufficient scientific and technological support for green and low-carbon development not only needs to promote green technology innovation at the source, but also depends on the extensive promotion and application in production practice.

The life of patent lies in the application. In reality, many green technologies that can benefit the environment are put on the shelf due to the private monopoly of the patent system, quietly waiting for the end of the protection cycle, and the production and life subjects who need to use these technologies can only be blocked out of the patent. After the end of the 20-year invention patent protection cycle, the technology has already lost its timely value of updating and iteration. In order to solve the problem that patent rights hinder the timely application of key green technology and give full play to the key role of green technology in environmental protection, the current academic research at home and abroad generally supports the addition of compulsory licensing specifications for green technology in the patent system. Representative views mainly include the expanded interpretation of public interest, such as explicitly incorporating environmental protection into the scope of public interest as the reason for compulsory license in patent laws and regulations (Wan, 2017), or implementing compulsory license for key technologies in specific fields involving the national economy and people's livelihood, such as clean energy, if necessary (Zhang, 2011, pp.69-77); And directly increase the compulsory license for green technology. For example, add the compulsory license clause for green technology patent within the framework of the

current patent system (Zhang & Qiao, 2022), and amend Article 50 of the Patent Law to directly stipulate that the patent administration department can issue compulsory license for environmental patents based on the purpose of ecological environmental protection (Zhou, 2011, pp.20-27). In addition, it has been proved that the application of compulsory green technology licensing system can increase the implementation and application rate of environment-friendly patents (Philips, 2007, pp.269-270). However, the contrary view holds that seeking the basis for the compulsory licensing of green technology patents for the purpose of public interest and public health will easily lead to the expanded interpretation of the principle of public interest, thus reducing the exclusive status of the patentee (Lv, 2020). In practice, it has not been fully studied whether compulsory licensing of green technology patent will weaken the incentive effect of patent system on green technology innovation and cause the imbalance between individual rights and public interests, and how to construct specific rules and standards for compulsory licensing of green technology patent. The logical foundation for the design and existence of the green technology compulsory license system is not to make the environmentally beneficial technology lie in the drawer due to the excessive monopoly of patent rights, and not to infringe the trust interest of the R&D on the protection of technological innovation due to the excessive compulsory license use, and finally to promote the green development of production and life and improve the ecological environment.

2. THE NECESSITY OF CONSTRUCTING COMPULSORY LICENSE SYSTEM FOR GREEN TECHNOLOGY PATENT

As resource and energy saving technologies, green technologies are conducive to environmental pollution control and ecological environment improvement, and plays an important supporting role in ecological civilization construction and human sustainable development. For the green technologies that have applied for granting corresponding intellectual property rights, there are special restrictions on the transfer and transformation. The right subject needs to obtain due intellectual property rights in the application of technologies. However, if the demand subject cannot pay a huge price to purchase the intellectual property rights of green technologies, the transfer and transformation of green technologies will be difficult to realize. In the world, the distribution of green technology patents is not uniform. Some developed countries have mastered most green technology patents and have an absolute right to speak in the corresponding intellectual property transfer. As a result, most countries need to obtain technology transfer or license through commercial negotiations before using

green technologies with intellectual property rights. The complexity of commercial negotiations often leads to a long waiting period, which slows down the promotion and application of green technologies to a certain extent (Xu, 2010). In general, the main owners of green technologies are the private sector, most of which are purely for profit. They are more concerned about the application of patent rights to benefit themselves and exclude competitors. In the absence of an effective mechanism, it is difficult for them to allow their competitors to use their green patented technologies. More likely, in order to discourage competitors, they will seek to protect their intellectual property and restrict their competitors' use of green technologies.

At present, China has not established an effective mechanism to promote the transfer of green patented technologies, and a large number of green patented technologies are difficult to benefit the broad masses of society. In the restrictions on the exclusive rights of intellectual property of green technologies, products, works and other objects, the special operating rules, such as compulsory license and fair use, do not list the situation of ecological environmental public welfare. For example, the issue of compulsory patent license is separately stipulated in The Patent Law, The Implementation Rules of the Patent Law, The Measures for Compulsory Patent License and other laws and regulations. The Patent Law clearly stipulates that the reasons for compulsory patent license are refusal of license, insufficient implementation, monopoly, emergency and extraordinary circumstances, public interest, public health and dependent patent. Among them, the compulsory license of green technology patent can find the legal explanation for the purpose of public interest in a specific situation, but the specific connotation and extension of public interest has not been determined, the implementation of compulsory license of patent based on the public interest of ecological environment is insufficient. Interest balance is the legislative goal of intellectual property, which means that the interests between the parties, between the subjects of rights and obligations, and between individuals and society should conform to the value concept of fairness (Wu, 2012). Under the background of tackling key core technologies of low carbon, zero carbon and negative carbon, establishing a more complete green and low-carbon technology innovation system, and strengthening the protection of green technology property rights, the rights and interests of green technology right holders are further protected, thus shaking the interest balance system of green technology intellectual property rights. It is necessary to promote the stability of intellectual property system in the field of green technology through the construction and improvement of compulsory license system of green technology patent.

3. INTEREST GAME OF GREEN TECHNOLOGY PATENT COMPULSORY LICENSING SUBJECTS

3.1 Rights and Interests of Green Technology Patentees Under Compulsory License

Compulsory patent license actually deprives the patentee of the right of patent exclusion based on specific reasons, that is, it can authorize the third party to use the patented technology disclosed by the patentee without the consent of the patentee. It is an important system design of interest balance in patent law since its beginning. In spite of this, in terms of the predictability of rights, the uncertainty of the starting time of compulsory license and the certainty of the starting field are easy to weaken the motivation of the patentee to continue to innovate (Peng, 2019). If the green technologies developed by the patentee has a high possibility of compulsory license, the right holder cannot fully trust the certainty of the right obtained according to the system authorization, and the expectation of the stability of the patent is damaged. In reality, the implementation of compulsory licensing of green patent in India has significantly reduced investment in research and development of more advanced and efficient green technologies for the Indian market (Hussain, 2020). Therefore, compulsory patent license system is not the deprivation of rights of the patentee, the patentee as the legal right holder, its basic rights and interests should be protected. In a compulsory license, the basic economic and spiritual rights of the patentee should be respected. In the case that the patent has been applied, compulsory license is required in the case of special environmental and public interests, which shall not disturb the market business order of the industrialization of the patented technology and the legitimate economic interests of the patentee, and shall not affect the personal identification and goodwill of the patentee. For patents that are not implemented, the cost consideration paid by the patentee for technological research and development and the acquisition of the patent shall be compensated, and the spiritual personal identification of the patentee shall be confirmed.

In terms of specific fees, Article 62 of the Patent Law stipulates that the patentee can obtain a reasonable compulsory patent license fee or handle the fee in accordance with the relevant international treaties to which China is a party. If consultation fails, the patent administration department under the State Council shall make a ruling. However, it is not clear how to define the "reasonable" of "reasonable usage fee" and how to adjudicate if the negotiation fails. The TRIPs agreement only stipulates that adequate compensation should be given to the right holder for compulsory license, but the scope boundary of adequate compensation is not clear. Neither the Patent Law nor the Measures for the Implementation

of Compulsory Patent License mention the standard for determining royalties. Under legal conditions, the patent infringement liability of the technology implementer is excluded by law, and the patentee subject to compulsory license is obliged to tolerate the exploitation of the patented technology by a third party without voluntary license. In other words, different from the voluntary license, the patentee subject to compulsory license does not undertake the obligation to provide relevant supporting resources and auxiliary proprietary technology for the implementer in the compulsory license. In the case of low usage rate, the patentee will not actively provide relevant support for the reasons of market competition. As a result, the implementation efficiency and effect of patent technology under compulsory license are not very ideal. At the same time, compulsory patent licensing limits the patentee's autonomy in technology implementation, cost recovery and profit harvest, and has an impact on relevant market competition, thus forming a negative incentive for innovation. If the initiative of the patentee is destroyed, it will only result in the destruction of both the patentee and the public welfare. Therefore, the patent rights and interests of the patentee subject to compulsory license should be reasonably protected, so as to maintain the motivation of continuous innovation of the patentee.

3.2 Rights and Interests of Users of Green Technologies Under Compulsory Patent License

The exclusive right protection of patent makes the green patentee have absolute exclusive right, so it has absolute pricing power. In practice, the price of green patent, which is the core technology, is often higher. The public must obtain the permission of the patentee and pay high consideration for the use of the green technologies, otherwise infringement will be caused. However, in reality, it is not easy to get in touch with the patentee and get permission, especially in key technology fields. The nature of technology monopoly and private right determines that green patents follow absolute benefit control in licensing, which makes it difficult for many patented technologies with important improvement effects on ecological environment to be widely applied in production and life. Although Article 53 to Article 56 of the Patent Law of China provides compulsory licensing for abuse of patent right, implementation of inventions and utility models in emergencies or for public interest, manufacture and export of drugs for public health purposes, and cross-compulsory licensing of major technological progress patents of significant economic significance. However, even for statutory compulsory patent license, in practice, "factual compulsory license" mainly occurs in judicature, which recognizes patent infringement based on national interests and social and public interests but does not stop the litigated behavior, while compulsory patent license in real sense rarely occurs. And even if the compulsory license of green technology patent can be successfully obtained, if the

patentee fails to cooperate with the obligation, the user may not be able to normally use the patented technology due to some technical barriers or secrets. As a result, the rights and interests of green technology patent application applicants cannot be guaranteed. However, the user applying for compulsory license of green technology patent will certainly produce corresponding beneficial environmental effects in the process of implementing the green patent, which is often consistent with the public interest.

3.3 PUBLIC INTEREST OF GREEN TECHNOLOGY USE UNDER COMPULSORY PATENT LICENSE

In the process of green technology implementation, the public interest is mainly embodied in the better realization of public environmental rights. It is beneficial to the protection and improvement of ecological environment, whether it is to improve the control of environmental pollution, prevent and delay the degradation of ecological environment or save and use of resources and energy. Although the user applying for compulsory license of green technology patent is based on his own production and application, the environmental benefits arising from the application of the green technology are the common interests of the public. If the green technology cannot be applied due to high pricing or blocked negotiations, the old technology that consumes more resources and energy can only be used or the technology cannot be applied in a rush to improve environmental pollution, which will not only bring losses to users, but also miss the improvement of the environment where the public live together, resulting in damage to the public interest. Of course, if the compulsory license of green technology is excessive or improper, it will also cause the loss of the patentee, which will affect the efficiency of green technology innovation, but also cause damage to the public interest. Therefore, there is a balance area between the patentee of green technology, the user applying for green technology and the public, so as to achieve a win-win situation among the three, and the demarcation of this balance area of rights and interests needs to be confirmed under the full verification of practice and theory.

4. SUGGESTIONS ON THE CONSTRUCTION OF GREEN TECHNOLOGY PATENT COMPULSORY LICENSING RULES

4.1 Construct the Technical Scope With Green Technology List and Database as the Main Body

The first edition of the flagship report "Green Technology Manual" jointly released by the World Intellectual

Property Organization (WIPO), the United Nations Network of Climate Technology Centers (CTCN) and the Egyptian Academy of Scientific Research and Technology (ASRT) currently focuses on three areas where the compulsory licensing of green technology patents is particularly urgent to deal with climate impacts: agriculture and forestry, waters and coastal areas, and cities. The scope provides an alternative international baseline. The 20th report of the CPC emphasized accelerating the research and development and popularization of advanced technologies for energy conservation and carbon reduction. The Implementation Plan on Further Improving the Market-oriented Green Technology Innovation System (2023-2025) issued by the National Development and Reform Commission and the Ministry of Science and Technology pointed out that the guidance of green technology innovation and the protection of green technology property rights service should be strengthened. We will work hard to solve the problem of insufficient scientific and technological support for green and low-carbon development. The compulsory license of green technology patent is an important part of the service of green technology property right, and will also have a comprehensive impact on green technology innovation. Green technologies are not just individual technologies, but whole systems of expertise, procedures, goods and services, equipment and organizational and regulatory procedures that are consistent with the socio-economic, cultural and environmental priorities set by the country.³ Clarifying the scope of green technologies that can adapt to compulsory licensing will be an important basis for determining whether the system rules can achieve the balance of rights and interests. Based on the key areas determined by Green Technology Manual and combined with the actual situation of our country and the urgent technical requirements of ecological civilization construction, it is an important aspect of protecting the rights of the green patentee to establish a green technology directory and database. Among them, the listed technology can apply for compulsory green technology license if it proves the necessity of public interest, and the green technology not included in the list should fully demonstrate the major public interest demand and irreplaceability of the use of compulsory license, and be carefully applied.

4.2 Clarify the Preconditions for the Consideration of Environmental Public Interests

Compulsory license of green patent is a licensing method that allows other units or individuals to implement the green invention without the consent of the green patentee according to the needs and balance of relevant laws and

public interests of ecological environment. It is the right restriction of green patent right. In order to promote the promotion and application of green patents, it is necessary to intervene based on the consideration of environmental public interests or introduce liability rules into the transfer of some specific green technologies. Including green technologies into the scope of compulsory licensing can effectively improve the conversion rate and utilization rate of green patents (Philips, 2007, pp.269-270), protect the advanced achievements of green technologies from being idle at will and promote the large-scale promotion of green technologies. At the same time, it also avoids the illegal monopoly of the patentee on green technologies, so as to promote the dynamic balance between private interests and public interests. On the basis of the national green technology directory and database, the interpretation of public environmental interests should be incorporated into the public interests of the existing compulsory patent license at the level of institutional rules, and special compulsory green patent license measures should be formulated, and strict application conditions and applicable norms should be set up. The ecological environment is the prerequisite for human survival and development. In reality, environmental pollution, ecological destruction and resource waste not only affect the sound operation of the ecological system, but also have a negative impact on the public life, and cannot meet people's growing needs for a better life. In the process of promoting Chinese-style modernization, under the background of building a beautiful China, the core basis of environmental public interest consideration is embodied in the consideration of people's ever-growing needs for a better life. In terms of active measures, the policy orientation of intellectual property sharing and sustainable development "shared value" is to promote the improvement of market-oriented green technology innovation system, and the intellectual property sharing of green technology innovation subjects is encouraged through taxation, subsidies, incentives and other forms (Vimalnath, Tietze, Jain, et al, 2022), so as to have an impact on sustainable and green development in the whole system.

4.3 Establish the Core Content of the "Three Elements" Inspection Standard

The compulsory license of green patent is different from the continuous royalty payment rules because it is applicable to no specific subject, but the continuous royalty can be called restricted compulsory license, that is, the two have something in common in specific application. The rule of payment of continuous royalty is regarded as precedent established in case law countries in the form of judicial precedent, which has formed a relatively mature application mechanism. The system design of compulsory green patent license can refer to the rule of payment of continuous royalty to establish the "three elements" test standard. First, whether the implementation effect

³ See section 34.3 of Agenda 21 of the United Nations Conference on Environment and Development, chapter 34, "Environmentally friendly technology transfer, cooperation and Capacity-building".

of the green patent is irreplaceable in this field; second, to weigh the interests and losses of the green patentee from compulsory license; third, to consider whether the public interests will be harmed if no compulsory license is carried out. Therefore, the establishment and improvement of the green patent compulsory license system should include three core contents: First of all, to standardize the initiation, approval and implementation procedures of compulsory green patent license, clarify the basic conditions for the implementation of compulsory green patent license, specific competent authorities or departments, government approval process, administrative reconsideration or objection procedures, royalty pricing standards, compulsory license implementation time limit, etc., and enhance the transparency, operability and rationality of compulsory environmental patent license. In addition, from the perspective of the rule of law system, the legal convergence of compulsory patent licensing should be improved, from the environmental Law, patent Law, Anti-unfair Competition Law and other laws to the implementation rules of the patent Law and other administrative regulations and departmental rules, so as to ensure scientific and systematic, and avoid conflicting clauses. Secondly, the supervision should be strengthened from the practical level. Before the implementation of compulsory license, the implementation effect of the green patent should be investigated whether it is irreplaceable in the field, so as to promote the connection between the green patent technologies under compulsory license and the actual production conditions and the market. Finally, the protection of ecological environment is clearly regarded as the reason for applying for compulsory license, but three basic conditions must be met. At first, serious environmental pollution or emergency environmental events are being faced; second, it is difficult to obtain better results by using other alternative methods. Then, the applicant and the right holder cannot negotiate for permission by themselves. Moreover, in this process, it is necessary to demonstrate and weigh the benefits and losses of the compulsory license to the green patentee, and consider whether the public interests will be harmed if the compulsory license is not carried out, and then the government can apply for compulsory license to a green patent by itself or by others.

5. CONCLUSION

With the introduction of the “two-carbon” goal, China’s ecological civilization construction has entered a crucial period of focusing on carbon reduction as a strategic direction, promoting synergistic efficiency of pollution reduction and carbon reduction, and promoting comprehensive green transformation of economic and social development. The wide application of green

technologies is an important support and necessary path to reduce pollution and carbon and realize green transformation. The compulsory license of green patent is a basic system to ensure the smooth use of green technology under urgent and necessary circumstances. Its spirit core is the same as that of compulsory general patent license, which is to promote the balance between public and private interests, so that the practical technology does not lie in the drawer and cannot be used. But compulsory green patent license emphasizes the ecological environmental benefits compared with compulsory license of general patent. In addition to the traditional role of balancing public interests and private interests of the regulator on the basis of promoting the attention to and protection of the ecological environment, aimed at alleviating global climate change and ecological crisis, promoting sustainable development and green development, to achieve environmental justice. Promoting the balance between the rights and interests of the right holders, users and the public is the inherent requirement of the legitimacy and science of the green technology patent compulsory license system. The construction of specific rules can be carried out from three aspects: the construction of the green technology directory and database, the pre-consideration of environmental public interests and the establishment of the “three elements” test standard. All in all, the basic purpose and goal should never deviate from the direction of ecological civilization construction and Chinese modernization.

REFERENCES

- Hussain, S. (2020). *Indian compulsory licenses for green technology will hurt India most in the long run*. <http://www.iam-media.com/Blog/Detail.aspx?g=d6893abc-6086-4667-9a13-95ed89aad9c5>. 2020-12-2
- Jeremy Philips. (2007). People in greenhouses. *Journal of Intellectual Property Law & Practice*, 2(5), 269-270.
- Liu, C. (2020). Proposal of the CPC Central Committee on formulating the 14th five-year plan for national economic and social development and the long-range goals for the next five-year period. *People's Daily*, 2020-11-03(03).
- Lv, Z. Q. (2020). Research on the path to promote the implementation of green technology -- from the perspective of green patent Standardization. *Science and Law*, (5), 11.
- Peng, X. Q. (2019). Protection of Rights and interests of patentees under compulsory patent licensing. *Politics and Law*, (5), 16.
- Philips J. (2007). People in greenhouses. *Journal of Intellectual Property Law & Practice*, 2(5), 269-270.
- Schiederig, T., Tietze, F., & Herstatt, C. (2012). Green innovation in technology and innovation management - an exploratory literature review. *R. D. Manag.*, 42, 180-192. <https://doi.org/10.1111/j.1467-9310.2011.00672.x>.

- Shang, X. Q. (2020). *United Nations Secretary-General calls for global "climate emergency"* [EB/OL]. <https://m.gmw.cn/baijia/2020-12/14/1301936357.html>, 2020-12-12.
- Vimalnath, P., Tietze, F., Jain, A., et al. (2022). IP strategies for green innovations - an analysis of European inventor awards. *Journal of Cleaner Production*, 377(1), 2-5.
- Wan, Z. Q. (2017). *Research on the development path of China's intellectual property system oriented towards ecological civilization*. Wuhan University Press.
- Wu, H. D.(2012). On the legal basis of intellectual property restriction. *Journal of Law*, (06), 6.
- Xu, S. Q. (2010). Research on intellectual property system related to adaptation and response to climate change. *Intellectual Property*, (5), 19.
- Zhang, N. G. (2011). On clean energy technology transfer in the post-Kyoto Protocol era. *Fudan Journal (Social Sciences Edition)*, (1), 69-77.
- Zhang, R. P., & Qiao, Y. (2022). Legal issues and cracking of green technology patent compulsory License under the background of "double carbon". *Journal of Hebei University of Science and Technology: (Social Science Edition)*, (2), 44.
- Zhou, C. L. (2011). On the ecology of patent law. *Intellectual Property*, (9), 20-27.