

Research on the Dynamic Factor and Model of the Sharing of Green Patent

Zhengrong Chen* Wei Song

School of Public Affairs, University of Science and Technology of China,
No.96, Jinzhai Road, Baohe District, Hefei City, Anhui Province,230000,China

Abstract

Although patent system effectively stimulates technological innovation, however, it also imposes restrictions on the application and promotion of the technology. Many scholars regard the promotion of green patent as a significant step in dealing with the severe environmental issue at present, and actively advocate the sharing of green patent. The sharing of green patent refers to the sharing of rights, which is essentially different from the sharing of technology. The dynamic that promotes the sharing of the green patent by the patentee can be categorized into internal dynamic and external dynamic respectively. The internal dynamic mainly includes the expansion of their own influence, the appreciation of green technology in its application, undertaking R&D (research and development) costs and risks together, jointly promoting the industrialization of technology and etc. The external dynamic is mainly to tackle climate change and jointly develop environmental protection industry. Open and free obtaining model, patent pool model of this field, community model of industrial chain, regional or intra-group sharing model and other diversified sharing models have being established through summarizing typical patent cases of sharing in practice and drawing lessons from effective exploration of sharing of technology to satisfy the demand of different types of sharing subjects and effectively enhance the depth and width of the sharing of green patent.

Keywords: green patent,sharing model,sharing dynamic

1. Introduction

Currently, the environmental issue has become a common task facing the whole world. The innovative development and extensive application of environmental-friendly green technology that represents new energy is the key to tackle development and environmental issue. The patent system, which is closely linked to the development and transformation of new technology, is undoubtedly playing a vital role in it. By giving the inventor the monopoly right of technology for business purpose in a certain period, the patent system can protect the interests of inventor and stimulate inventor to be engaged in technological innovation, however, it also imposes restrictions on the application and promotion of the technology. Therefore, how to boost the sharing and application of green patent technology has become a significant direction for many researchers to think about the way of solving environmental problem and climate change. For a long time, academic circles have been in absence of an in-depth research on the dynamic of sharing of green patent, the model of sharing and the supporting system. For this reason, the discussion on affecting the application and promotion of the green patent should be highlighted.

2. The meaning and discrimination of the sharing of green patent

The sharing of green patent involves three concepts, namely green technology, green patent and patent sharing. Green patent is also known as “environmental technology”, “environmentally friendly technology”, “clean technology” and etc. So far, there is no unified definition from the authority. The Agenda 21 approved by the Rio Earth Summit in 1992, *Basic Facts of the World Economy and Society in 2011: Major Transformation of Green Technology* published by the United Nations Department for Economic and Social Affairs (DESA), and World Business Council for Sustainable Development (WBCSD) have respectively extended different definitions toward “green technology”. The author believes that the experience and knowledge that can both boost productivity and a more coordinated relationship between human and nature is green technology which can mainly be divided into the following three kinds: first, the technology being applied to the restoration of the environment; second, the technology doing no harm to the environment; third, the improved technology that will pollute the environment but is more advance than before, the promotion and application of which will effectively mitigate the damage to the environment. Green patent is a kind of patent taking the green technology as target. The sharing of green patent means that the green patent patentee can authorize the patent they have to the public or a specific group for business purpose for free or at a low price.

Thus, the sharing of green patent belongs to the sharing of rights, the former of which is essentially different from the sharing of technology. The sharing of green patent means that the monopoly right is licensed to other people by the patentee within a statutory period for free or at low price for business purpose on the premise of the existence of patent right and addressing the legitimate application of technology. The sharing of technology falls into information sharing, which aims at tackling the cognitive issue of technical knowledge, that

is, whether a specific green technology can be understood and grasped by others without taking the existence of patent right as a premise. For this reason, the theory of information sharing and knowledge sharing cannot be simply applied to analyze the problem existing in the sharing of patent.

3. The Dynamic Factor of the Sharing of Green Patent

3.1 Internal Dynamic

3.1.1 Promote the technical standard of enterprise and endeavor to achieve the elevation to industrial standard, even national standard

The technical standard of a company rising to industrial standard, even national standard will bring substantial economic and social benefits to it and greatly strengthen the influence and competitiveness of it. It is said that “the worse company sells products; a better one, technology; a top-ranking one, patent; a super one, standard”. We can say that the competition of standard is a kind of competition with higher level, greater meaning and broader impact other than the competition of product and brand. Some green patents will be geared to the society (or industry) by the company to achieve the sharing, which will effectively enhance the public image and influence of the company. In particular, in some field that have not yet formed the industry standard, while with the application of shared green patent technology, it will gradually form a unified bridge for technical exchange and further extend the patent into standard, which serves for the purpose of “patent standardization”. In this case, the company’s shared patent may become an essential patent of industry standard and thus gain distinctive leadership. Based on this purpose, the green patent owned by some companies, conducting their sharing, will be geared to the society or intra-industry so as to acquire market competitive advantage or development opportunities.

3.1.2 Promote the appreciation of green technology in its application by taking advantage of the positive externality character of technology

As the object of green patent, green technology is evidently different from tangible property. Positive externality, one of the characters of green technology, signifies that other positive outcomes generated by technical activities but go beyond the desired outcomes of them. To put it bluntly, once the technology owners share the technology with other people, the technology itself will not bring about tangible loss as the tangible property, but the “adsorption effect” in the course of communication and application, namely assimilation of the beneficial experience and approaches for improving that others applies techniques, thus further advance completeness and scientificity of technology to prolong the life circle of it. It is this character of technology that attracts some green patentees to make the decision of the sharing of patent. Of course, for those green technologies with short life circle, patentees are forced to sharing the green technology before it being weeded out by new technologies.

3.1.3 Share the costs and risks of the R&D in order to effectively reduce the reduplicate R&D of green technology

It is because of the R&D of new technology requiring considerable input, long period and high risk that companies’ willingness to invest the R&D of green technology is substantially limited, especially to those middle and small-sized enterprises who cannot bear all the R&D alone. Many companies with R&D intention have signed patent sharing agreement and form an R&D alliance to collect funds and share risks together, which objectively integrates the technical advantages of each company and prevents the waste of social resources from reduplicate R&D. The green technology developed by the cooperation alliance once being granted the patent, it will naturally become the shared patent among many companies. The model that companies research and develop together, and share the patent has reduced the cross-licensing cost and enhanced the efficiency of patent licensing and dealing.

3.1.4 Jointly achieve the industrialization of green patent technology and share the benefit from the green patent

The industrialization of patent technology requires the integration of versatile resources, such as business management, marketing, transformation of fund, technical support and etc. Due to the limitation of their own conditions, some companies cannot achieve the industrialization of green technologies by themselves because of their deficiency in fund or marketing capacity after being granted patent. In this case, it is necessary to introduce other enterprises with corresponding strength, and jointly promote the “Last Mile” to achieve the industrialization of patent technology. For the companies with abundant capital, favorable marketing ability and professional business management level yet being short of R&D talents and green patent, they are urgent to make breakthroughs in technical R&D and patent bottleneck. The internal demand of these two companies will become a strong dynamic driving the sharing of green patent and vigorously promote the sharing of green patent between the companies that cooperate with each other and complement each other’s advantages. Thus, green patent will become a part of enterprise cooperation in accordance with certain valuation.

3.2. External dynamic

3.2.1 The urgent need to deal with climate change and protect the environment that human beings shared with

The scientific research and observations show that the global climate has been undertaking changes featured by

global warming over the past century. Human activities, especially the emission of large volumes of greenhouse gases in the process of industrialization in developed countries, has become a dominant factor that gives rise to global climate change. Climate change will accelerate the melting of glacier and snow, bring about the imbalance distribution of water resources, threats to biodiversity and frequent appearance of catastrophic climate. Confronted with the severe environmental issue caused by climate change, preserving the environment we human beings shared with has become consensus among governments of the world and people from all walks of life. In the process of balancing development, resource and environment, the application of green patent technology acts as one of the effective way to solve it. The governments, enterprises and societies are competitively devote themselves to the development and application of the green patent. This kind of favorable external environment will powerfully stimulate the sharing of green patent and facilitate green development.

3.2.2 Being blessed with vast environmental protection industry market and jointly develop the demand of it

The Paris agreement, taking into effect on November 3th, 2016, explicitly stipulates the emission reduction targets for both developed countries and developing countries, which has brought vast international market for the environmental protection industry. Having been maintained a high-speed growth for so many years, the issue of resource constraint and environmental pollution during the development of China's economy merge continuously. The government at all levels pay more and more attention to the protection of the environment in the process of development. The Fifth Plenary Session of the 18th Central Committee of the Chinese Communist Party has identified the "green development" as one of the Five Development Concept. All the following strict environmental protection laws and regulations as well as environmental policies, including the revision of the atmospheric pollution prevention law, the release of water pollution control action plan ("the ten-measure action plan to tackle water pollution"), the implementation of Environment Protection Law, the most strict law in history, and the environmental protection tax law that will soon be carried into effect in 2018, will be conducive to promote the development of environmental protection industry. Therefore, according to *the research report on the analysis of Chinese environmental protection industry market and investment prospect from 2016 to 2020*, the government at all levels have successively introduced many plans to guide and support the environmental protection industry. It is estimated that the total investment of China's environmental protection market is expected to reach CNY17 trillion. Currently, China's environmental protection industry is in early stage of the development featured by small economic aggregate. The annual production of enterprises and public institutions in environmental protection industry in China account for a low proportion at GNP, whose average size is small. Nearly 90 percent of middle and small-sized enterprises are township enterprises who are weak in technological development and have less product varieties. We can foresee that the development speed of environmental protection industry in the next few decades will outclass that of the national economy. The early stage that the environmental protection industry stand at and the vast domestic and international market prospect of it have sped up the development of the sharing of green patent.

4. Discussion of the diversified model of the sharing of green technology

4.1 Open the model of free access

Patentee opens the green patent to the global (or inland of a country) enterprises, organizations and individuals free of charge through voluntary donations, or the countries purchasing the green patent at a low price and offering it to the domestic enterprises or individuals free of charge (Some foreign enterprises have free access to it in accordance with the negotiations between countries and FRAND principles). The feature of this model lies in that the user of the sharing of green patent has no limitation in the types of industry and enterprise, even no limitation of nationality and can apply the green patent at no cost. This model means that any organization and individual can enjoy free access, free sharing and free application.

One of the typical cases of this model is the "Eco-Patent Commons" jointly launched by IBM Corporation and World Business Council for Sustainable Development who opened tens of environmental protection patents to the public sphere at that time. It was not until October of 2013 that eleven global companies representing different industries joined this patent sharing project and a total of 100 patents was opened. "Inclusive plan" belongs to one of the typical cases of free access model in China launched by Chinese Academy of Sciences (CAS). It is organized by the intellectual property operation management center of CAS in a unified way and integrates many patent resources of the institutes of CAS, taking the sharing patent pool as the key of the work and selecting the relevant enterprises to share the patent pool. A total of 1,054 patents were approved at the first batch, covering five major industries. Middle and small-sized enterprises can apply for free access to the patent pool through signing agreement with the intellectual property operation management center of CAS.

4.2 Industrial patent pool model

In a certain industry, each enterprise owns different R&D advantages and technical specialty. In order to tackle the common technical problems, they form a shared patent pool which not only can integrate the R&D resources, minimize R&D risks and ensure the source of fund, but also reasonably reduce the cost of cross-licensing. This

feature if this model is that the subject of the shared patent belongs to a specific industry and each has their own patents. Moreover, those who participates in the shared patent pool have access to the sharing of green patent and meet the explicit requirements. This model is highly feasible and is conducive to the overall development of the industry. The most representative case of the application of patent pool is the shared green patent technology of battery power system in Tesla who would not launch litigation patent infringement if other company applies the patent in good faith. The patent publicly announced by the Tesla includes battery power system patent and the patent how the battery system integrating the rest part of the automobile. All these patents not only contribute to taking the leader role in lowering the cost of new energy automobile industry, but also increasing the safety and the charging speed of the battery. The most representative exploration of the model of industrial patent pool in China refers to the establishment of Dongguan LED patent alliance and Chinese LED industrial patent alliance. Dongguan LED patent alliance was founded in July 22th, 2013. At that time, 13 enterprises signed the agreement who were the first batch of the members of the alliance. The establishment of allied patent pool is the biggest bright spot of Dongguan LED patent alliance. The member of the alliance can inject the patent of the enterprise into the allied patent pool so as to share it and further establish LED patent database, patent navigation system, and platform and early warning mechanism, which effectively integrate the patent resources in LED industry. Meanwhile, the alliance advocates the application of the new technology in this industry, encourage and support alliance members to jointly develop the LED technology, tackle and apply for the patent together, or purchase the relevant patent. The patent they have obtained will be free of charge for the alliance members. Based on the exploration experience of Dongguan LED patent alliance, the first national LED industrial chain patent alliance was officially established in China on July 25th, 2014. The establishment of shared patent pool will contribute to strengthening the distribution of patent and tackling the overseas intellectual property risks of the enterprises, which will also exert profound effect.

4.3 Industrial chain community model

As the modern society being characterized by increasingly fine social division of labor and long industrial chain, a product cannot be produced without the cooperation with other countries from the production and procurement of raw materials to the consumption of it by the consumers. The different enterprises in the industrial chain has become the community of interests and relied on each other closely, which lays a solid foundation for flow of the industrial chain of the patent between the enterprises. The patent sharing model of industrial chain community is characterized by the mutual cooperation and the access to the patent among the R&D enterprise, manufacturing enterprise, products selling enterprise and enterprise providing after-sales maintenance services. They form the patent pool to jointly improve the user experience, expand product market, and enhance the total performance of the industrial chain which serves for the final purpose of win-win result. This model is widely used in practice, for example, in order to generalize new sowing technology and lessen the damage to the land, the manufacturing enterprise actively apply this new technology to the agricultural machinery and share the manufacturing information and relevant patent information with the agricultural machinery selling enterprise and enterprise providing after-sales maintenance services so that they can carry out the installation, debugging and maintenance efficiently who then shares the market information, user experience and the patent that formed from ameliorating a certain technology in the process of maintenance service, thus jointly improving the user experience of the farmers and boosting continuous innovation of new sowing technology. The Toyota has made a similar attempt via establishing the knowledge sharing mechanism of Toyota supply chain between purchase department and Operations Management Consulting Division (OMCD), which also includes the sharing of patent and partner enterprise on the supply chain, thus strengthening the competitiveness of each partner enterprise, and influence and implicit competitiveness of Toyota.

4.4 The sharing model within the region or group

China's economic and social development is uneven and its regional difference is large. The enterprises within the region are faced with common development environment and technical challenges. A throng of questions in the course of development are the common ones faced with many enterprises, so it is necessary for the enterprises to strengthen the cooperation with each other. Once a favorable cooperation foundation is established, it will be conducive to issue the similar supporting policy by negotiating and allying between the governments. All these factors will provide possible and convenient conditions for the sharing of patent within the region. For instance, in Hong Kong, Guangdong, Macao, the Yangtze River Delta region and the Yangtze River economic belt, local governments can work together to purchase certain green patents, set up public shared patent pool and regional green patent sharing mechanism, and facilitate the promotion and application of the green technology to meet the demand of public interests in improving the environmental issue we confronted with and harnessing the rivers. Meanwhile, the proportion of investment can be determined through negotiation among the governments involved in the cooperation. The regional patent sharing model has always been dominated by the government for the interests of the public.

Similar to the regional patent sharing model, the patent sharing model within the group refers to the enterprises opening and sharing the patent together. Enterprise group has often formed by one or more large enterprises with powerful strength and investment-oriented functions. Each enterprise has their own patent. Based on a clear property and contractual relationship, the enterprises open the patent to each other within the group and set up patent pool, which objectively reduce the cost of cross-licensing, and enhance the transformation and application of the patent. When the time is ripe, the enterprise group can establish unified intellectual property operation agency to better safeguard the overall rights and interests by boosting the sharing and application of patent within the groups and making advantage of patent combination out of the groups.

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