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The Analysis of the Relationship between Clean Technology Transfer and Chinese Intellectual Property Countering the Climate Changes

Hao Min[1]

Abstract

This report discusses the relationship between the Chinese intellectual property systems which counter with the climate change and the transfer of clean technology, and states how to encourage the developed countries transfer the clean technology to the developing countries according to the relative international climate convention program. The report also proposes the current hindrances and developing strategies according to Chinese current situation at this field. The report is mainly divided into three subjects: the relationship between clean technology transfer and the intellectual property countering the climate changes; the analysis of current technology transfer modes relating to the climate; the difficulties of Chinese countering climate changes technology transfer and strategic thinking.

Taking positive actions to the climate change are not only the common interests of all mankind, but also the common responsibility of the international community. Climate change, a major technology transferring, should not copy the rules of market economy. The world should create a harmonious environment for effective technological transferring and promotion of climate changing. Renewable energy is the hope for human to solve the problem of energy in the future, and also an important means to address climate change. Many countries are working on research and promotion of renewable energy and low carbon now. "United Nations Framework Convention on Climate Change," called on developed countries actively transfer relevant technologies to developing countries, however, developing countries may meet an important factor, “the impact of intellectual property rights”, in access to these technologies.

Technology transferring to address climate change is the focus of international climate talks. According to the "United Nations Framework Convention on Climate Change" (UNFCCC), the access to new technologies is widely recognized a major incentive for developing countries. Many countries can not get the transfer of technology in practice. Developing countries lack the empirical evidence of the development of relevant policies to address climate change technology in their development and implementation of the different

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stage, also different types of obstacles to the transfer of technology are quite different, so the transfer of technology to address climate change has become the most difficult issue of developed and developing countries, which involves two aspects: one is concerned about how to obtain the best possible technology resources to address climate change, the other one is strongly urged to pass legislation to strengthen intellectual property protection and enforcement.

In addition, technology transfer to address climate change has also been affected by strong political factors, many see it as a symbol of interests, the "carrot", attracting developing countries get into the "United Nations Framework Convention on Climate Change" and the "Kyoto Protocol" -- a wide commitment to comply with requests, but it does not effectively play the expected role. The relationship between International intellectual property rules to address climate change and technology transfer, China's current use and development of clean energy, the manner of climate change towards technology transfer and intellectual property protection, in the future treatment of technology transfer in how does China take the position and prospects for future development under the framework of international conventions and so on, all are the urgent problems of integration. The following three topics will be analyzed and discussed.

Theme I: the relationship between technology transfer to address climate change and intellectual property

Ⅰ. The major issues and challenges facing the technology transfer to address climate change

Actively promoting technology development and transferring will become how to fully implement the central theme of "the United Nations Framework Convention on Climate Change" effective after 2012. However, differences still exist on this issue, particularly the barriers transferring of technology to address climate change, and what measures should be taken to overcome these barriers. "United Nations Framework Convention on Climate Change" and the "Kyoto Protocol" are set targets and commitments to the transfer of technology. Many environment-friendly technologies are often of a high-tech, involving the strategic interests of technology owners and future competitive advantage. Although these technologies can bring huge reductions, but on the owner's perspective, transfer of technology may be less beneficial to the technology, and R & D invest the huge amount of money and manpower or material resources. To free transfer is almost impossible, not to mention some technologies that they did not want to transfer. In addition, private institutions and companies that developed the technology transfer ask for sufficient commercial returns. Thus, it

is impossible to free the way to developing countries; and it will not transfer the latest technology. Therefore, developed countries' transfer of the technology, equipment and capital is to upgrade the industrial structure further, and this shift does not include those involved in technology transfer of the national interest.

Developing countries do not undertake obligations of reduction emission[2], from the perspective of the transferee, the first and foremost factor of considering introduction a technology by the company is whether it generates sufficient commercial return; the Government consider whether it generates the beneficial development of national economy, or it helps raise the level of employment and technology is conducive to the improvement of local environment, not considering the reduction potential of technology as a necessary prerequisite. Secondly, small scale enterprises in developing countries, with low costs, are very difficult to bear some of the costs of expensive technology transfer, if lending companies own a great risk, if technology transfer through the national financial or other means such as government loans, due to the separation of risk of stakeholders and beneficiaries, whether the technology can be a good application will be unknown. Furthermore, governments in developing countries have relatively weak financial base, inadequate foreign exchange reserves; it can not be borne by the Government introduction of technology by a large scale. Therefore, developing countries do not have enough incentive to introduce environmentally friendly technologies. In addition, the gaps and barriers of a variety of markets and institutional in developing countries make these technologies encounter many difficulties in the application and promotion.

In short, in the process, the intellectual property system is a double edged sword of technology transfer; it can be both power and obstacles. The role of intellectual property not yet clears in the field of technology addressing climate change. Even so, the adverse effects of intellectual property rights on technology transfer for climate-related may also need our attention and study.

Ⅱ. The role and future impact of intellectual property rights on technology transfer

There is no uniform definition of the "technology transfer". According to the 1985 "United Nations Code of Conduct for International Technology Transfer (Draft)", technology transfer refers to the "transfer on the manufacture of a product, application of a process or system knowledge to provide a service, but it does not include the mere sale or lease of goods". American scholar Brooks

[2] Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC)[R]. UNFCCC. FCCC/CP/1997/L.7/Add.1. Bonn. 1997、United Nations Framework Convention on Climate Change[R]. Switzerland: IUCC, 1992.

(H. Brooks) believed that the technology transfer is process spread by human activity[3]. Some scholars in China believe that technology transfer is a dynamic process, in essence, the transfer of technical capacity.[4]

The role of intellectual property protection has been controversial in the complex process of technology transfer. In fact, intellectual property rights in technology transfer are both the positive incentives and potential barriers. IP is set to return for inventions, and promote dissemination of knowledge in order to achieve broader private rights of social objectives. By granting control of the information in possession of rights for Protection Technology Exchange, intellectual property rights is a helpful tool for technology transfer in this respect, and research shows the existence of such an active role, including in the stronger patent protection and productivity, trade flows, foreign direct investment and transfer of technologies by establishing a link between hybrid.

On the other hand, intellectual property system can not guarantee or meet the need for effective technology transfer. Appropriate institutional foundation, management, and competition are needed for intellectual property to be supported in order to play its effectiveness. Moreover, there are intellectual property rights can not serve as motivation to utilization. Some technology's market power of patents and other intellectual property rights allows the owner of a product or method of restricted access and applicant rights - also led to cost more than the best standard of social technology transfer and thus hindered.

The exact role of intellectual property rights in response to climate change & technology transfer is still uncertain. UNFCCC and the "Kyoto Protocol " do not explicitly mentioned the intellectual property rights in technology transfer, but the discussion of the expert group on technology transfer was still on the agenda, held that the intellectual property to technology transfer of the environment needing is both essential element and potential obstacle to. Therefore, it needs to establish appropriate institutions, rules and policies to promote technology transfer.

Nevertheless, the potential negative effects of intellectual property accessed to climate change technology calls unprecedented. Early in the Bali conference, the European Parliament adopted a resolution that it should develop an ambitious post-Kyoto agreement, to make a "corresponding adjustment" to other international conventions, including intellectual property rights.[5] Discussion in

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3 Proceedings of Conference on Technology Transfer and Innovation, 1966, P53-62.

4 "Contemporary International Technology Transfer and Countermeasures", Li Zhijun, the China Financial and Economic Publishing House, 1997, p13.

5 November 2007 the European Parliament on trade and climate change Resolution No. 29 (2007/2003 (INI)).

this area will continue and strengthen research on intellectual property and technology transfer to address climate change will also help put up a bridge for the relationship between the different views held by countries in the future. In addition, in the international intellectual property rules and a broader context, it helps to improve the field of existing and potential national understanding and awareness of measures to strengthen intellectual property rights and other agents to promote the role of technology transfer. Below will be focus on the international intellectual property system, the issue of technology transfer mode.

Ⅲ.The trends of intellectual property and technology transfer in the field of climate after 2012

"Bali road map" provides a series of measures taken by the space for the post-2012 intellectual property rights, innovation and knowledge acquisition system of climate areas. Some of the measures are already in the demonstration phase, including the financial mechanism, to address intellectual property and technology transfer, and publicly funded technology policy issues such as intellectual property protection. Other topics include setting up a reward fund climate-related inventions, the establishment of an open system or cooperative arrangement of the invention.

Financial mechanism is considered an important way to solve the problem of intellectual property and technology transfer. Take the "multilateral technology acquisition fund" for example, the transfer of technology aims to provide funding to developing countries initiate, including the purchase of intellectual property rights, in view of "Implementation of the Montreal Protocol Multilateral Fund for the "success story. The fund received a positive response in the negotiations. But in the "Montreal Protocol", the "intellectual property is not as feared as a huge obstacle to the transfer of technology", as the latter face a broader range of related technologies and potential patent challenges[6]. To public funding for climate change technology, the idea of intellectual property is not made in the context of UNFCCC.

Government-funded research and development -- primarily environment-friendly technology -- technology to address climate change, but this funding is currently vested in determining the ownership model, commercial development or technology transfer is very vague, and it carried out by the Intellectual Property System protection (UNCTAD, 1998) often. The results are those obtained through the publicly funded R & D technologies and services not in

[6] Moreover, in addressing the problem of the ozone layer to reduce material and can effectively address the special choice of the problem is to determine the technical solution and have been available, these conditions in the context of climate change is not available.

accordance with the needs of the public, perhaps in the post-Kyoto climate areas to the corresponding series of measures introduced to guide the public sector funding of public funds to address climate change and commercialization of the use of technology to keep a certain influence.

Theme Ⅱ: The analysis of current main climate-related technology transfer mode

Technology transfer policy and the model provide for the principle of the technology's output and input of a government. Modern mode of technology transfer policy is not only a country's science and technology policy an important part, but also providing the entire country's political economy. As countries with different social systems and economic level, national technology transfer model is different, and even there will be great difference and change at different times.

Ⅰ. The international technology transfer is the main battlefield of the intellectual property operation of developed countries

The intellectual property with the core elements, patent system, is given the private rights, which can bring high returns, and the right of the patent itself has a high to low flow inertia. Developed countries, control the international transfer of technology in the flow of patents and profits of as much as possible by all means to maintain its monopoly. Therefore, international technology transfer, including the future clean energy and climate-related technology transfer that occupying an important place in this arena of is a fight between developed and developing countries to a certain extent-- the patent of monopoly and antitrust , control and anti-control of, and the latter will be particularly more intense.

1. The protection policy model

States typically set up the review agencies to conduct macro-control to limit the export of technology transfer of technology, especially the advanced technology and cutting-edge technology in general that may rise to the perspective of state secrets and strict review. Even if the general transfer of technology, in order to avoid establishing competitors, also implement protectionist policies, because the role of technology is far beyond its own properties and it is related to a country's overall national strength. Therefore, the protectionist policies of protectionism in the technology transfer are more intense than the general merchandise trade. Particularly the developed countries, on one hand, it implements the technical barriers of the policy to the blockade of advanced technology, great opening the technology markets, so that it makes proven technology participate in international exchange and earn huge foreign exchange.

Developed countries transfer technology to developing countries with more considerations from the political and economic relations, the technology transfer is at a lower level generally, which is also very obvious in response to climate change technology licensing. Even transfer certain countries and regions the advanced technology, they will also consider the other side whether it become competitors, leading to their loss of market. There are generally limited and selective policies of technology transfer. Restrictions on technology transfer between developed countries are relatively seldom, relatively free, so the technology trade between them accounted for a large proportion of the world's technology trade. But there is fierce competition between them, each implement strict protection policies of the cutting-edge technology transfer from their own interests.

2. Incentives model

Countries in the world are actively encouraged and adopted various preferential measures to introduce foreign advanced technology (especially high-tech). Due to the different levels of economic development and strategic objectives, the difference between the introductions of technical priorities, the content of encouraged policies is different.

The encourage policies and measures of developing countries to technology transfer are:

1) Provide preferential conditions for the introduction of foreign advanced technology;
2) Provide facilities to encourage developed countries to invest directly, start joint ventures or cooperative enterprises, as to introduce the advanced technologies;
3) Provide relief from taxation on the import of technology and equipment;
4) Improve the intellectual property system; encourage the technology transfer and economic, social and environmental development;

Measures of developed countries to encourage policy on technology transfer are mainly reflected in:

1) Transfer the high-tech needed through collaborative research. The governments coordinate policy and sign the scientific and technical exchange agreement if necessary;
2) Encourage foreign direct investment to high-tech production of superior products to compete with the host country;
3) Provide a variety of concessions and treatment to the introduction of high technology;
4) The introduction of scientific and technical personnel.

In short, whether developing or developed countries, it is necessary to implement the correct technology transfer model, and use the advanced scientific and technological achievements in the world, to make a reasonable allocation of national resources in order to promote their common economic development strategy objectives.

Ⅱ. The overall impact of intellectual property system on developing countries

1. The impact of clean energy technology transfer to developing countries

There are many different markets on renewable energy for developing countries. The most obvious one is to make their carbon dioxide emissions of a reduction of the market (it is not required by international law, but may be required in the future). Second one is to provide the carbon offset market under the framework of the "Kyoto Protocol" Clean Development Mechanism (CDM). The third one is the export market for renewable energy products, such as bio-fuels (or may be biomass power) and equipment (such as wind turbines), and the developing countries come into the industry as a supplier to the global industry.

As for the markets of CO2 emission reduction and the markets of offset emissions for developed countries, intellectual property is unlikely to be the major obstacle to access to technology interests for developing countries. As for the export market, including photovoltaic cells, ethanol (or other renewable fuels) or wind turbines, etc., the situation is slightly complicated. As for the ethanol, the key factor will be the concerns and similar tariff barriers, but not IP barriers. As for the PV, the intellectual property system is still not likely to be a major obstacle. In the wind energy sector, although the problem is not so clear, there may be almost non-existent intellectual property rights. In all the three areas, enterprises in developing countries have successfully entered into the market leadership. In fact, in some cases, patents may promote technology transfer. Patent dispute can be resolved by cross-licensing or generally non-monopoly industry common approach to product modification.

In addition, whether the local barrier to trade is helpful to the development of these industries or not? From the point of clean energy technologies, the tariff is more like a new way to protect the local industry, and may cause economic inefficiency.[7] State-funded research project is to help domestic enterprises to obtain necessary technology-oriented to compete in the global. The success of research programs in developing countries is uncertain. Any country should

[7] For example, China and India get tariffs of photovoltaic and wind technologies; China is 8% to 10%, India 15%.

encourage technology transfer to the national industry carefully used of intellectual property when considering research and technology transfer plan.

2. The impact of international climate negotiations in the field of environment in developing countries in future

In general, there is not a special new issue in the field of intellectual property essentially. Competitions between different suppliers in different areas are likely to minimize the royalties, and there might be the most serious issue of patents caused by new technologies in the future. There is a risk of new technology that some of the broader coverage of the patent may make new, more efficient or cheaper technologies that have become complicated. Wind energy is the most likely areas of risk, the patent in the field has been used to try to protect the market from the threat of foreign competition, and industry concentration in the field of clean energy sources is previously mentioned inside the highest.

It is often required the government's public support to improve the clean energy economy after the technology has been developed. Governments in developing countries tend to ensure research results obtained from the patent, and to transfer the authorizer of domestic enterprises to benefit. In essence, the part of the political basis of support is to help domestic manufacturers, and also this is the intention of conditional aid. But it is still significant potential to solve this problem, that requiring developed countries to agree to authorize the transfer of publicly funded inventions to give up its national interests, at least, those that are important to the global environmental technology. This is very similar with the "humanitarian license" field of medicine and agriculture.

This will require a commitment stronger more than the typical global environmental agreements. Another way is technology as part of the separate agreement, that is equal exchanged between the research funding based on the principle of reciprocity.[8] The most important is to remove unnecessary barriers to trade in these areas, such as the EU restrictions on Chinese energy-saving light bulbs and U.S. restrictions on Brazilian ethanol. It is wise to retain some subsidies for the global environment of economic in this renewable energy industry. Although the subsidies are offered for environmental protection goals, but it is often reflected the concerns of the domestic development, especially concerns about the domestic agriculture, and may eventually produce the result of discrimination against developing countries. Ideal situation is one that does not distort trade or discriminatory way firms in developing countries to develop grants. This will be a very difficult negotiation, but it is a pursuing and worthy goal.

[8] Some scholars think that the most important is to remove unnecessary barriers to trade in these areas, such as U.S. restrictions on Brazilian ethanol. John. Barton, “Patenting and Access to Clean Energy Technologies in Developing Countries”, 2008.

Ideally, the developed countries also carry out further work and they are committed to make its part of the technology development meet the specific needs of developing countries for use. Developed countries can ensure the enterprises of developing countries have the opportunity to participate in such work. In any such agreement, a variety of research projects in order to leave room for different strategies are very important and common development. Agreement can consult one of two ways: one can be used as part of the climate change negotiations; making technology more accessible should be included by the commitment in the negotiations, perhaps it can be a more stringent environmental constraints in developing countries as a kinds of exchange.

ThemeⅢ: The difficulties and countermeasures of China's technology transfer responded to climate change

Ⅰ. The situation of China's technology needs responded to climate change

The major needs of current climate change technology focus on several sectors such as electricity, transport, construction, petrochemical, etc. These departments have a high energy consumption sectors, and the energy consumption accounts for about 50% of total energy consumption, 70% of total industrial energy consumption. 20 trillion will be needed in the related fields of power, oil and gas the next 25 years. Demand increase for energy efficient energy conversion technologies ask for a higher requirement, which include highly efficient power generation technology, pollution control technology, low-carbon technologies (mainly renewable energy and carbon dioxide control technology.)

Due to the developing countries are in the rapid growth period, on the one hand, they need developing the economy, on the other hand they face pressure to address climate change, technological change is the only way in developing countries. For example, China is facing large-scale infrastructure construction and backward technology lock-in effect, so the needs of China's current technology transfer are especially urgent. From 1996 on, the Chinese government has announced a series of lists of climate change technology needs, the more detailed content, the technology needs more clear. We can see that the technology China needs to address climate change are enormous. The technical cooperation and technology innovation is very important. In June 2007, the Chinese government published the "China National Climate Change Programme", which is made clear to China in 2010 to address climate change objectives, including the basic principles, key areas and policy measures. The technical requirements can be divided into three categories:

1) 1, The technology of climate change detection, prediction, simulation, computing, that including the oceans, atmosphere and terrestrial ecosystems, observation techniques, meteorological, marine and satellite technology, resources, climate system modeling and computing.
2) 2, Energy technologies, that including the low-pollution coal-fired power generation technology, large water generator technology, new nuclear energy technology, renewable resources, technologies, building energy conservation technology, clean gas vehicles, hybrid technology.
3) 3, The other aspects, that including energy efficiency, new materials and so on.

"Program" not only reaffirms the traditional basis of technical requirements, but also reflects the technological innovation.[9] At the game with developed countries in the economic interests on climate change, the technology transfer of clean energy become more headache problem than double China and other developing countries. Advanced technology research, development and application are the ultimate means to address climate change, which are consistent with recognized and special emphasis by the world's countries and the "Framework Convention on Climate Change". As countries in technology transfer and spawned disagreement "Kyoto Protocol" established "clean development mechanism" (CDM) to clean energy technology transfer, positioning important target for the transfer of advanced technology from developed to developing countries to jointly respond to climate change.[10] However, by the implementation of the situation in recent years, the majority of CDM investment projects only involve some basic techniques, such as recovery of landfill methane gas released, its effectiveness is minimal. The majority of developing countries have also strongly dissatisfied. Studying its origins, on the one hand, the developed countries worry about the transfer of technology affect their monopoly, on the other hand, the environmental conditions of technology transfer is not ideal. So it is the developing countries only concerned about the financial incentives and market access issues most of the time.

Ⅱ. The relations between obstacles of China's technology transfer responded to climate change and intellectual property

[9] For example, battery and hydrogen technology first appeared on the list of technology needs, ecosystem recovery and reconstruction techniques have also been included in an important position.

[10] Under this mechanism, pollution emissions more than the "Kyoto Protocol" provisions of the Western companies can invest in clean energy projects in developing countries to complete their emission reduction obligations.

As a developing country experiencing economic growth, China's energy consumption growth in the global climate change will play an increasingly important role, while its demand for the advanced clean energy technologies is particularly urgent. Technology transfer is the requirement of sustainable development around the world, and it is to achieve the goals set in UNFCCC (the CO2 concentration stabilized at a safe level), which is one of the most important means required to adapt to climate change. The energy efficiency technologies, renewable energy technologies, cleaner production technologies and other technologies conducive to environmental in developing countries are the most ones in need. Help developing countries establish a mechanism of technological innovation is also an important part of technology transfer.

The road of large-scale power generation technologies in China from the 80s years, 20th century indicates: from sub-critical to supercritical and then to gas turbines, finally to the nuclear power. There are case rely entirely on the introduction of technology, such as sub-critical generation units and the introduction of flue gas desulphurization technology; and there is a market for technology, such as gas turbines and nuclear power development; also the case of cooperative R & D, such as the 2003 China's participation in the International Thermonuclear Fusion Experimental Reactor organization, in 2006 China officially joined the next generation program, in 2007 China's participation in the EU Seventh Framework Programme; also the case of failure of technology transfer, such as gasification technology.

China needs efficient and clean energy technologies, which demand open to the world, but the introduction of combination with the independent research and development. We must master the core through the market for technology. Technology transfer of international cooperation involves experience, human resources, mechanisms, funding and other issues, including the export limits. As climate change is a global issue, it should have the political will to transfer technology to developing countries in climate change technology transfer, developed countries. This transfer is not charity or aid. However, statistics show that many multinational in China signed technology transfer contracts with less than 10% of patents since 2002, and some of these patents are also relatively backward technology. Existing clean energy industry leaders rather than not share the world's leading technology potential competitors out of fear. Because these advanced clean energy technologies and business interests of developed countries, which is closely related to or even constitute the entire country in clean energy the core competitiveness of economy. Is such a transfer easier said than done?

The reason why there is a significant technology transfer barriers, from an economic point of view, is mainly there is not free lunch under the economic

conditions in the market for technology transfer. No one is willing to transfer their technology when R & D costs are not included the internal situation come. In fact, it is the key who will foot the bill for the transfer of technology to technology transfer. In the technology transfer process, in general, there are the following barriers and obstacles: (1) political or military considerations; (2) lack of technological innovation and dissemination capabilities; (3) the capital of limited size, especially for smaller companies; (4) possible financial risks; (5) data, information, knowledge and awareness of the lack of and indifferent; (6) barriers to trade; (7) do not understand the technology needs; (8) market is not perfect; (9) system, systems, and legal issues; (10) transaction costs.[11]

For China at present, the specific barriers to technology transfer case are mainly reflected in three aspects:

1. The developed countries are still lagging behind the promotion or outdated technology to developing countries. Take automotive technology transfer for example, the Chinese market has great potential to enhance the transfer of technology calls for the reduction of automobile consumption, which is more than feasible. However, the transfer of automotive technology to China from the current developed countries are mostly used to make large, gas-guzzling, high-end cars, and runs counter to the concept of energy saving, even if the practical and technical timing is delayed about five years. In other areas of technology transfer, there are also similar problems, the developed countries to developing manufacturing technology fan sold the production license usually behind the origin of five years, while China is lagging behind Europe and America polysilicon technology and other countries about 20 years, which has almost no technology transfer possibility.
2. Joint research and development will be impeded. EU-China cooperation has some foundation in joint R & D, but the scope is difficult to extend to the world, such as low-speed fan technology, the second-generation bio-liquid fuel technology, the new thin-film battery technology in the development of joint R & D are no expansion in the future.
3. Impeding intellectual property protection climate change technology market. There is contradiction between Intellectual property protection and new energy technologies to climate change and the rapid market-oriented. Conservative intellectual property rights will prevent climate change related technology market. Take wind power for example, China made the fans to pay the transfer fee and the cost increased by 10%. The United States Supported the establishment of "international clean energy fund", as the the construction of cleaner and energy efficient buildings, power plants and other facilities pay for post-Kyoto era of measures to China, India and other

[11] "International technology transfer and intellectual property protection," edited by Qi Yan Jun, Tsinghua University Press, Beijing Jiaotong University Press, July 2008.

emerging countries. But the U.S. strongly opposes the establishment of any possible development of new technologies against U.S. companies active in the fund.

As an international obligation to address climate change, technology transfer and international trade existing market mechanisms are not compatible, so the developed countries can only make non-binding political commitment. It is very difficult to expect them to have substantive progress. Technology transfer and intellectual property rights are closely linked. How strike a balance between the global climate and protection of intellectual property rights, from the public interest as the starting point, will require being repeated practice by States making the problem verifying the truth. On the significant technology transfer to the climate change issue, the role of intellectual property rights is not their core issues. At another point of view, even if we totally resolve the IP issues between developing and developed countries , climate change problem will not be solved. And the knowledge property rights should not be an excuse of developed not transferring significant technology to developing countries.

Absolutely, China itself has many problems to be solved, especially the larger gap of intellectual property protection with the developed countries, such as the legal protection of technology is still relatively secret backward, and this constitutes an obstacle to the transfer of technology to China. In addition, there is still a strange phenomenon about the transfer of clean energy technology today: on one hand, there is a lot of clean energy technology with limited use, and no large-scale development intention to use; on the other hand, they urgent need this technology, but they can not afford high transfer fees because of the limited funds and facilities. When it comes to the issue of interests of the people accessed to global climate change, the Chinese government leadership should be established, enterprises to participate in international technology transfer mechanisms, so that reasonable and effective clean energy technologies will play a positive role.

Ⅲ. The countermeasures of Promoting technology transfer to address climate change

There are not national boundaries of climate change, so are the technology transfer and intellectual property issues. Technology transfer involves the protection of intellectual property and commercial interests, and the transfer of technology among enterprises should respect market rules and seek win-win situation.

China hold that developed countries should bear the costs of current environmental technologies, and technology transfer to climate change should not be simply a way to use the market, which can not simply follow the pattern of commercial trade. Under normal circumstances, R & D costs in the climate change technology transfer are borne by the transferee, and developing countries are the main transferee. However, as climate change is a global issue, especially the excessive pollutants were missed during the first countries in the industrial development, the developed countries should reduce the cost of technology transfer, especially provide a better government platform to promote technology transfer and promotion in developed countries or the transferor.

In fact, the intellectual property protects the creativity of a nation. Fundamentally speaking, the intellectual property rights should be the common wealth of mankind. In the background of the global response to climate change, developed countries have the obligation to provide financial and technical support to developing country governments. Government should play a leading role in technology transfer to to provide favorable conditions and convenience for both companies. Governments of developed countries can not just focus on technologies for markets and for their own economic interests, but also consider how to perform the obligation to transfer technology to developing countries free or discount under the Climate Change Convention. They should get rid of the barriers to technology transfer to create active mechanisms for the transfer.

The future development direction of technology transfer to Climate change: Firstly, we can consider setting predictable financial resources mechanisms within the framework of "convention" to encourage private sector technology transfer. Our experts also envisaged that when technology is transferred from developed to developing countries, where energy localization will be promoted in the latter, it will produce large amounts of greenhouse gas emission reductions, which can try to be put as a types of emission reduction credits, and some goes to technology providers. Technology providers can use this credit to exchange for money in the carbon markets, and then use the carbon credit to compensate for the transfer of technology costs, which not only reduces the financial pressure in developing countries, but also makes the enterprises of developed countries get returns on the transfer of technology. This extends the original project-based CDM to technology-based CDM mechanism, which can contribute global energy technology to transfer speeding up global emission reduction targets.[12]

Secondly, we can strengthen the joint research and enable developing countries to participate in technology research and development, from which to gain

[12] He Jiankun, "emission reduction credits or to promote technology transfer", "21st Century Business Herald", August 2009

experience and technology. China needs to increase the share of nuclear energy, joint research and development, and improve performance evaluation system, strengthen the private and public inter-company cooperation current. On the one hand, joint research and development can be able to share technology, on the other hand, it may protect intellectual property, which can be said to be the most simple and lowest-cost means for technology transfer and research and development. It can stimulate the development of endogenous technologies, as well as regional and sub-regional technical exchange provide financial support, network and share information. It should also be endogenous technology development for the provision of adequate financial support and technological achievements to share with the developed countries, while building mutual trust, eliminate barriers to technology transfer.

Third, we can review the technology development and transfer regularly in the "Convention" to establish effective evaluations and review mechanisms. Identifying barriers and gaps in the transfer of technology to guide and adjust the original plans and strategies.

Fourth, the technology deployment is not only the most critical part of technology transfer, but also the choice of each investor. If technology investors are the public sectors, they promote and support technology development and deployment through the implementation of public policies to. However, most current investors are private companies or individuals needing to develop environment-friendly, climate-friendly technology policy to influence their choice. Therefore, they need to analysis the current technology and risk, using some tools, such as national technology projects to identify technology needs and cost-effectiveness, using criteria to judge the potential demand and based on analysis of the role of financial incentives and support, thus they can contribute to the international community demonstration projects to carry out.

Fifth, we need to ensure a good environment for support in the phase of technology implementation, which including communication, deployment and transfer. This will also promote the implementation of technology, such as trade brought about by subsidies, intellectual property protection and promotion of incentives for technology innovation communication, deployment and transfer of the funding system.

Sixth, we can establish a dedicated financial mechanism, and developed countries should show a certain percentage of public financial resources as a basis to support predictable and stable financial for incentives, technology transfer and patent license. It also provide training and services to capacity building of developing countries.

Seventh, we should coordinate the relation between protection of intellectual property and needs of greenhouse gas emissions. Too high fees of patent license hinder low-carbon technologies in developing countries. The international community should continue to strengthen, on the other hand, protection of intellectual property it should develop policies to promote competition, combating technological monopoly of the climate field basing on the characteristics of low-carbon technologies to form a reasonable mechanism for the transfer.

Eighth, we can establish a mechanism "government guidance, enterprise participation and market operation" to promote low-carbon technology transfer to developing countries.

In short, climate change technology development and transfer are potential development, China needs more efficient and cleaner energy technologies opened to the world; technology introduction ought to be in conjunction with independent research and development; we should strengthen international cooperation to share new technological achievements.

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