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Prospects for the Renewable Energy Industry in China: Legal Perspectives

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Abstract

This article discusses the role of the *Renewable Energy Law of the PRC* 2006 in bringing about a new dawn in the development, and particularly the commercialisation, of renewable energy in China. However, whether the Chinese government can invigorate the renewable energy industry with the aid of legislation alone is still uncertain. In this light, the article points out the changes to the content and form of China's legislation on renewable energy that are still needed. It also reflects on the merits and demerits of two ways in which governments may intervene in the renewable energy market – Renewable Power Portfolios and Feed-In Laws.

Key words

China, Renewable Energy, Industry, Legislation, Government

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Introduction

The exploitation and use of renewable energy[1] has seen considerable progress in China in recent years, but the overall level of development still lags behind developed countries, and even behind some developing countries like India and Brazil.[2]

On January 1, 2006, the eagerly anticipated *Renewable Energy Law of the PRC* (hereinafter referred to as the *Renewable Energy Law*) came into force. The National Development and Reform Commission Official emphasises that developing renewable energy is an important measure to ensure energy supply, improve the energy mix, protect the environment, eliminate poverty and promote sustainable development,[3] and optimistically believes that the Law will enable China to become one of the largest renewable energy markets, in the shortest period of time.[4] Businesses have lost no time expanding in the hope of grasping the commercial opportunities brought about by the Law apparently worth a hundred billion yuan.[5] However, there is also no lack of commentators who probe the limits of China's legislation on renewable energy and the embarrassment associated with implementation.[6]

In fact, even before the *Renewable Energy Law* was promulgated, in order to promote the development of renewable energy, several related laws, rules and regulations had been promulgated, and competent administrative departments had formulated and implemented a series of associated policies. For example, the *Electric Power Law of the PRC* 1995 stipulates in Paragraph 2 of Article 5 that "[t]he State encourages and supports the generation of electricity through the use of renewable and clean energy resources." The *Energy Conservation Law of the PRC* 1998 reemphasizes in Paragraph 3 of Article 4 that "[t]he state shall encourage the

1 Renewable energy in China can be divided into traditional renewable energy and new renewable energy. The former includes large and middle scale hydropower and biomass energy; the latter mainly includes non-fossil energy sources such as small hydropower, wind energy, solar energy, biotic energy, geothermal energy and ocean energy. For the purpose of this article, "renewable energy" refers to new renewable energy.

2 See "Create Environment for the Development of Renewable Energy" *Science and Technology Daily* (14 February 2006).

3 Refer to the speech of Zhang Huobao, Deputy Director of the National Development and Reform Commission, to the Ministers' Forum of Beijing International Renewable Energy Conference (8 November 2005) <http://www.china5e.com/dissertation/newenergy/20051108182019.html> (12 September 2006).

4 Note 2.

5 Cui Yi "Renewable Energy Law Gives Birth to A Hundred Million Market" *China Business* (26 September 2005).

6 Han Xiaoping "Cool Thinking About Renewable Energy" <http://www.china5e.com/dissertation/newenergy/20060727111705.html> (12 September 2006); Zhao Yongxin "Keeping Watch the Homestead Just with the Law Is Far from Sufficient" <http://env.people.com.cn/GB/35525/3999540.html> (12 September 2006).

development and utilisation of new and renewable sources of energy." The former Ministry of Electric Power formulated the *Provisions on Management of Gridded Wind Power Generation* 1994. The former State Planning Commission promulgated the *Provisional Rules on Management of the Capital Construction Project of New Energy* 1997. The State Environmental Protection Administration formulated the *Management Measures on Forbidding Burning and Comprehensive Use of Stalk* 2003. The former State Planning Commission, State Science and Technology Commission and the State Economic and Trade Commission jointly formulated the *Outline of Development of New Energy and Renewable Energy* 1996-2010. However, the above-mentioned rules and regulations are just guiding principles which fall short of adequate, concrete, effective and enforceable measures. On the other hand, the rules and policies on promotion of the development of renewable energy also lack harmony, continuity, stability, authority and operability. Without enforceable legal measures, such scattered regulatory instruments cannot result in effective implementation. A substantial problem was that the State lacked a defined strategy, target and means for the development of renewable energy.

The *Renewable Energy Law* is a law formulated to make good the deficiencies of related legislation and policies. On February 28, 2005, the law was passed with 162 in agreement, 1 waiver and 0 objections, at the 14th conference of the Standing Committee of 10th National People's Congress. The Law defines the legal relationships between the government, enterprises, public and other legal subjects in the development of renewable energy. It was enacted in the context of China's socialist market economy and energy market-oriented reform. Whether the government can sustain its hopes for the renewable energy industry with the aid of legislation alone is a key question.

Analysis of the Background of China's Renewable Energy Law

Energy Security, Environmental Protection, Economic and Social Development and Renewable Energy

China's major energy source has been coal. Because the economy has expanded so rapidly and extensively, the problems of energy shortage, the irrational structuring of the energy sector, and environmental pollution are becoming more and more prominent. The exploitation and use of renewable energy has great potential to become an important alternate energy source after coal, oil and gas. The development of renewable energy can increase energy supply, improve the structure

of the energy sector, reduce ecological pressure, relieve the greenhouse effect, improve basic power supply to the countryside and remote districts, and also realise the integration of economic, social and environmental benefits to promote the sustainable development of the country.[7]

Market-oriented Reform of the Power Industry and Development of Renewable Energy Industry

The power industry is one of the last "fortresses" of China's planned economy. With the establishment of China State Power Corporation in 1997 and the abolition of the Ministry of Power Industry in 1998, China's power industry started to separate the functions of government from those of commercial enterprises, and gradually shift from a planned economy to market economy. In 2002, the State Council decided to deepen power industry restructuring with the overall aim "to break monopoly, introduce competition, raise efficiency, reduce cost, improve the price mechanism, optimise resource allocation, promote power development, boost the nation-wide grid connection and build an open, fair, orderly and healthily developed power market system with government functions and enterprises functions separated from each other". The key strategies for realising this goal are: the realignment of the assets of the former state owned power corporation; the separation of the power generation and power grids into two categories to create power generation corporations and thepower grid corporations; the separation of plants from grids and introducing competition for grid connection; and the introduction of market–oriented operation mechanisms.[8] In order to strengthen supervision and administration over power enterprises and the power market, the State Council also decided in 2003 to establish the State Power Regulatory Commission. However, the multi-layered power management structure, established under the conditions of the planned economy, has resulted in strong inertia. Consequently, the direction of a systematic reform of the country's energy management system is not yet clear, and the corporatisation of state-owned power enterprises and the market-oriented reform of power industry have a long way to go.[9]

With respect to renewable energy, the policy framework had focused historically on small scale hydropower and biotic energy in the countryside with the core purpose to supplement the shortage of fuels in the country. In the 1980s, along with the increase of energy demand and associated environmental concerns, the State

7 Mao Rubai "Introduction of the Draft Renewable Energy Law of the PRC" Communique of the Standing Committee of the National People's Congress (February 2005) at 134–135.

8 *Report on the Development of Energy in China (2003)* (China Metrology Publishing House: 2003) at 156–157.

developed specific policies for the development of renewable energy, supporting key scientific and technological projects mainly with direct subsidies including government appropriation. In the 1990s, to meet the demand of establishing a socialist market economy and implementing a sustainable development strategy, the government started to: formulate a renewable energy development plan; support research and development of renewable energy through financial appropriation and project subsidies; and to promote the commercialisation of renewable energy with interest discount credit and preferential taxation.[10]

The Factors Restraining the Development of Renewable Energy

The development of renewable energy is affected by diverse factors such as: the properties of the renewable resources themselves; the maturity and comparative cost of the technologies; the stage of commercialisation; the status of the market; the regulatory and policy environment; the strategic orientation; and the social acceptance.

With respect to the properties of resources, renewable energies are environment-friendly. At the same time, they also have their demerits, such as low density of energy, wide-scattered distribution, intermittent output, and the fact that they are easily impacted by natural eco-environmental conditions.[11]

With respect to the maturity of renewable energy technologies, they can be divided into four kinds: economically feasible technology; government inspired commercialised technology; technology under research and development; and future technology.[12] Related Chinese enterprises are typically small in size, backward in technology, unstable in product quality and low in technical maturity. With respect to cost-performance, most renewable energy products are rather expensive and lack competitiveness in the market because of imperfect legislation and weak law

9 The terms of reference of the State Power Regulatory Commission include market regulation, power transmission regulation, power supply regulation, pricing and financing, check and audit, and power safety. However, within the current management framework of the power sector, the functions of project examination and approval, price surveillance, and the approval, regulation and formulation of industrial policies are exercised by the National Development and Reform Commission. The function of financial management is exercised by the Ministry of Finance while the function of personnel assignment is exercised by the State-Owned Assets Supervision and Administration Commission. On the other hand, local governments and related department also have their own rights of administration.

10 Xie Zhiguo "Development of the Policies on Our Renewable Energy Since Foundation of Our Country" *China Soft Science Magazine* (September 2005) at 51–54.

11 Note 8 at 225–226.

12 Wang Qingyi "Status, Obstacle and Countermeasures of Renewable Energy in China" *China Energy* (July 2002) at 42.

enforcement, and the fact that environmental pollution caused by conventional fossil energy has not been effectively internalised. Moreover, imperfections in renewable energy technology and the lack of technical standardisation pose an obstacle to the development of renewable energy industry.[13]

With respect to commercialisation, China's renewable energy industry has seen a gradual growth and development with small hydropower, solar energy water heaters and some other products already moving towards commercialisation, but most of the important technologies are still backward. For example, wind power generation, biotic power generation, solar power generation and tidal power generation have already reached or have been close to commercialisation levels in developed countries, but in China, they are still at the research and development, or demonstration, phase without the basis for large scale commercialisation. In general, the renewable energy industry is in its infancy.[14]

With respect to the market, the fact that technical maturity, commercialisation and the cost-performance of renewable energy are lower in China means that the market share has been small, and growth has been slow. This dampens investors' enthusiasm and confidence and restrains the renewable energy market from further development. For example, the exploitation and use of renewable energy in the whole country was only 1.4 per cent of total consumption of primary energy in 1990, reaching 2.4 per cent[15] by 2000, and 3 per cent by 2003.[16] Moreover, the lack of open, fair, standardised and orderly market competition, the lack of public information about the market, renewable technologies, economic and financial considerations, and the lack of standards, monitoring and regulation of product quality are also important factors that restrain the establishment and development of the renewable energy market.[17]

With respect to laws and policies, before the *Renewable Energy Law* commenced, related laws, rules, regulations and policies on renewable energy did not provide clear and forceful guarantees about the development and future prospects of the renewable energy industry. This point has been discussed in the Introduction and it is unnecessary to repeat it here.

With respect to strategic considerations, in comparison with many developed countries, the development of renewable energy in China has not been a priority. In

13 Note 8 at 237–239.

14 Zhang Lizi et al "Research of the Policy Framework to Promote the Development of Renewable Energy Generation Power in Our Country" *China Electric Power* (April 2006) at 89; Liang Zhipeng "Inevitable Process to Development Renewable Energy and Our Policy Orientation" *China Energy* (May 2002) at 30.

15 Note 8 at 226.

16 Mao, note 7 at 134.

17 Note 8 at 241.

developed countries, the use of, and infrastructure for, oil and gas have a long history, while the development of nuclear energy is often widely questioned and even resisted by environmentalists and the public. This makes the exploitation and use of renewable energy the key means for many developed countries to develop clean energy and implement their obligations to reduce the emissions of greenhouse gases. However, China's energy mixture is composed mainly of coal and the ratio of oil and gas is very low. Confronted with the intense contradiction between economic development and environmental protection, China must improve the energy mix as soon as possible by increasing the percentage of high quality energy and clean energy. In light of China's current energy resources, the phase of China's economic development and the fact that China has not yet accepted any international obligations to limit or reduce emissions of greenhouse gases, China will pay special attention to clean coal technology and nuclear energy. The natural gas and oil industries will also be strengthened as will the exploitation and use of renewable energy. Therefore, although the *Renewable Energy Law* declares as a policy in Article 4 that "[t]he Government lists the renewable energy as the preferential area for energy development", experts believe that it will be difficult for renewable energy to capture a significant share of China's energy mix in the short term.[18]

With respect to the regulatory system, according to the division of functions, the State Development and Reform Commission, the Ministry of Commerce, the Ministry of Agriculture, the Ministry of Water Resources and the State Power Regulatory Commission all have responsibilities for the supervision and administration of renewable energy respectively. It is difficult to achieve regulatory harmony given the number of government departments whose functions co-exist or overlap. Also, investment strategies are scattered, while the construction of facilities often overlaps, and procedures contain extensive yet trivial details. This reduces the efficiency of managing the renewable energy sector and weakens the ability of the state to exercise overall control.

With respect to social acceptability, given lower levels of economic and social development and slow progress of the political system in China, people's environmental awareness is generally very weak. Many local governments do not understand the importance and urgency of developing renewable energy projects. Moreover, the public are not willing to pay for renewable energy. For example, Shanghai Municipality started in November 2005 to encourage all the citizens to purchase "green electric power", but by the end of December, only 5 households purchased in the Hubei District. The main reason is that every user of "green power" needs to pay an additional 5.3 yuan each month.[19]

18 Liang, note 14 at 31.

19 Zhao, note 6.

In summary, China faces a number of restraints such as the high cost of, and the small market for, renewable energy. These problems need to be regulated and addressed through appropriate legislation. China's legislation on renewable energy needs to make breakthroughs in regard to the cost-performance of renewable energy technology, expanding the scale of the renewable energy market, and building and perfecting the operating mechanism of the renewable energy market.

International Experiences and Pressure

Since the 1970s, but particularly in recent years, the world's interest in renewable energy has grown quickly against the backdrop of an energy crisis and global warming. In general, renewable energy technology has gone through the process of research, development and demonstration and finally large scale commercialisation, becoming, in the 21st century, an important alternative of conventional fossil fuels. In the initial phase of the research, development and demonstration of key renewable technologies, followed by commercialisation, many countries in the world adopted legislation to promote their development, with good results. Particularly, some developed countries and regions like Europe, Japan and the United States formulated and implemented appropriate legislation and combined the efforts of the market, government and society to promote the development of renewable energy. Although there are some differences, most of them have accumulated the following common experiences: defining the middle and long term targets for the development of renewable energy and creating a stable and appropriately sized market to inspire investor interest and confidence; making upfront state investments to encourage industry to participate in the research and development of renewable energy technologies energy and to promote their commercialisation for domestic and overseas markets; enhancing awareness and education about environmental protection to foster an atmosphere of public support for renewable energy and to motivate the government and business enterprises to develop renewable energy. [20]

With respect to greenhouse gases, after the United States, China is the second largest emitting country in the world. The technological and economic competition of renewable energy in the world market, the future challenge of greenhouse gases and especially any obligations to limit or reduce emissions which may be placed on developing countries, during international negotiations for climate change after the *Kyoto Protocol*, are significant pressures which China faces today and in the near future.

20 Energy Institute of the State Development and Reform Commission "The Great World Trend of the Development of Renewable Energy" <http://www.newenergy.org.cn/html/2006-8/200688_2.html> (16 September 2006).

The Purpose and Principles of China's Legislation on Renewable Energy

Purpose of the Legislation on Renewable Energy

Different phases of economic and social development, different resource conditions and different ecological status make for varying purposes of renewable energy legislation in different countries and regions. But in general, the main purpose in developing countries is to solve the problems of rural fuel supply and the problem of power supply to remote areas. The situation in developed countries is more complicated. In the 1980s, the basic motive was to develop renewable energy during the oil crisis and to diversify and relieve the pressure on energy supplies. Since the 1990s, under the influence of environmental pollution, particularly the greenhouse effect, the major purpose of legislation has become the need to address environmental problems.[21]

With respect to China's policies and legislation on renewable energy, the priority has been, for a long time, the development of small hydropower projects and the utilisation of rural biotic energy. The core purpose has been to supplement rural fuels and address the problem of power supply to remote areas. Starting in the 1990s, China paid attention to the industrialised development of renewable energy.[22] The purpose of China's legislation on renewable energy has changed fundamentally from addressing the energy problems of rural and remote areas to giving priority to promoting and ensuring the industrialisation and commercialisation of renewable energy, so as to diversify the energy mix and reduce its environmental externalities. Therefore, the *Renewable Energy Law* makes clear in Article 1 that the purpose of the Law is "to promote the development and utilisation of renewable energy, increase energy supply, improve the energy mix, safeguard energy security, protect the environment, and realise the sustainable development of the economy and society". Article 4 also makes it clear that "the Government lists the development and utilisation of renewable energy as the preferential area for energy development and promotes the construction and development of the renewable energy market by establishing total volume target for the development of renewable energy and taking corresponding measures. The Government encourages economic entities of all

21 Energy Institute of the State Development and Reform Commission "Use Foreign Experiences for Reference to Promote the Development of Renewable Energy of Our Country Through Legislation" <http://www.newenergy.org.cn/html/2006-8/200689_11377.html> (16 September 2006).

22 Xie, note 10 at 51–54.

ownerships to participate in the development and utilisation of renewable energy and protects legal rights and interests of the developers and users of renewable energy on the basis of law".

Obviously, the Law tries to give consideration to the interests of multi-sectors including the economy, environment and society, while clearly reflecting the priority of economic development with the environment and social welfare enjoying second priority. The problem of greenhouse gases is not the main purpose of the legislation on renewable energy, as it is in many developed countries, especially European countries.

The Principles Underpinning the Legislation on Renewable Energy

The *Renewable Energy Law* also tries to abide by the following major principles: combining state responsibility with social support, combining government regulation with market operation, combining current demands with long-term development, and so on.[23]

"Combining state responsibility with social support" refers to the fact that the government should take primary responsibility for developing the renewable energy sector while the public should bear the statutory obligation to support the development of renewable energy. This will create an appropriate legislative policy environment, market environment and social environment to ensure that renewable energy enjoys "man-made" market demand, market scale and government-supported market competitiveness compared with conventional energy. This is a key principle with a direct bearing on whether China's legislation on renewable energy can promote the rapid, sustainable and healthy development of relevant industries.

So called "combining government regulation with market operation" refers to the interactive relations and comparative status of the government and the market in developing renewable energy. As we all know, in the development of renewable energy, the three "hands", namely, the market, government regulation and social participation, need to have an organic cooperation. The market is the basic element of a successful renewable energy sector, while government regulation is the key and social participation is a necessary and important supplement. According to foreign experiences, without appropriate intervention, regulation and support from the government, most of the enterprises involved in renewable energy could not compete with traditional energy enterprises and the market of renewable energy could not be established and developed. On the other hand, if there is no market mechanism, it

23 Mao, note 7 at 135.

would be hard for renewable energy enterprises to effectively upgrade their technologies, improve their management, raise their efficiency and strengthen their market competitiveness, and it also would be hard for the renewable energy industry to be sustainable and reach maturity. Therefore, the government should bear important responsibilities in formulating market rules, regulating market operation and promoting market development at the same time as ensuring an appropriately sized renewable energy market to allure investors to meet the demand of such a "man-made" market. The *Renewable Energy Law* also declares in Article 4 that "the state would promote the construction and development of the renewable energy market by establishing total volume target for the development of renewable energy".

"Combining current demand with long-term development" refers to developing and utilising renewable energy to meet current urgent demand, particularly in rural and remote areas, as well as promoting the development of environmentally friendly technologies like wind power, biotic power, solar power and bio-liquid fuels to meet China's long term energy security and environmental protection.

The Development Targets and the Assurance System for Renewable Energy

As research has shown, the main restraint on the development of renewable energy in China was the lack of a firm legal system of reneable energy total volume target. Such a legal system should include two basic elements: the first is the total volume target and the second is the means to realise the target. The former is a compulsory provision for the development of a total volume of renewable energy within a certain period — a target which the government must try to realise. The latter includes a series of policy measures and assurance mechanisms for the realisation of the total volume target. The system of total target should stipulate middle and long term targets for renewable energy in a country, or an area, that should be reached within a fairly long timeframe. Such a system would help investors to make judgements on the development speed, scale, market potential, and renewable energy opportunities in the future.[24]

The *Renewable Energy Law* and other related laws have established the target and corresponding assurance system for the development of renewable energy. The *Renewable Energy Law* is composed of 8 chapters and 33 articles, it places the

24 Ren Dongming "Discussion on Several Issues about Establishing Total Volume Target System for the Development of Renewable Energy in Our Country" *China Energy Resources* (April 2005) at 22.

"promotion and application" of renewable energy at the core, while other provisions like "resource survey and development plan", "industry guidance and technology support", "price management and fee sharing" and "economic incentives and supervisory measures" are secondary. At the same time, this Law is simply a framework piece of legislation. Many aspects of the Law need to be further defined and implemented by formulating plans, administrative rules and regulations and technical specifications.

The Renewable Energy Targets

Article 7 of the *Renewable Energy Law* states that "[e]nergy authority of the State Council shall, on the basis of the whole nation's energy demand and the actual situation of renewable energy resources, set middle-and-long term target of the total volume for the development and utilisation of renewable energy at the national level, which shall be implemented and released to the pubic after being approved by the State Council. Energy authority of the State Council shall, on the basis of the target of total volume in the previous paragraph, as well as the economic development and actual situation of renewable energy resources of all provinces, autonomous regions and municipalities directly under the State Council, cooperate with the people's governments of provinces, autonomous regions and municipalities directly under the State Council in establishing the middle-and-long term targets of the total volume for the development and utilisation of renewable energy for their respective administrative regions and release the targets to the public."

The total volume targets for renewable energy development and utilisation nationally, in the provinces, autonomous regions and municipalities directly under the State Council shall be set on the basis of a survey of renewable energy resources. According to Article 6 of the Law, energy authority of the State Council is responsible for organising and coordinating the national surveys of renewable energy resources, and for working with relevant departments of the State Council to establish technical regulations for resource surveys. Relevant departments of the State Council, within their respective functions, are responsible for related renewable energy resource surveys, and the survey results shall be submitted to the energy authority of the State Council.

The renewable energy development and utilisation activities shall be guided and regulated by detailed and legally-binding plans. Article 8 of the Law sets out provisions for the formulation, examination, approval and amendment of the development and utilisation plan of renewable energy resources: Energy authority of the State Council shall, on the basis of the middle-and-long term total volume target of renewable energy throughout the country, cooperate with relevant departments of

the State Council to prepare a national renewable energy development and utilisation plan, which is to be implemented after being approved by the State Council. Competent energy administrative departments of the people's governments at the level of province, autonomous region and municipality directly under the State Council shall, on the basis of the middle-and-long term targets for the development and utilisation of renewable energy in their own administrative regions, cooperate with relevant departments of the people's governments at the same level to prepare renewable energy development and utilisation plans for their own administrative regions. These shall be implemented after being approved by the people's governments at their own level. In case the approved plan needs to be modified, approval of the original approving authorities needs to be obtained.

Obviously, the *Renewable Energy Law* simply lays the foundations and institutions for realizing the renewable energy total volume target and, in principle, requests that, in preparing the plan for the development and utilisation of renewable energy, the opinions of relevant units, experts and the public be solicited and the scientific reasoning be based on. However, it does not define the absolute volume or relative volume of the development and utilisation of renewable energy for the nation and each province, autonomous region and municipality directly under the State Council. In other words, the targets will not be decided by the law, but by energy authority of the State Council and the people's government of each province, autonomous region and municipality directly under the State Council. So the targets are quite uncertain.

What is clear, however, is that the energy authority of the State Council and the people's governments at provincial level, have the legal obligations to establish the total volume targets for the development and utilisation of renewable energy for the nation and each province, autonomous region and municipality directly under the State Council.

Accordingly, the energy authority of the State Council has taken responsibility for preparing the "Middle-and–Long Term Plan for the Development of Renewable Energy". The renewable energy development target for the future 15 years is as follows: renewable energy shall account for 10 per cent of the whole country's total energy consumption by 2010, and reach 16 per cent by 2020. In June 2006, the plan was discussed and passed at the Second Conference of the State Energy Leading Group, which will be submitted to the State Council after further modification.[25] Thus it can be seen that the establishment of the total volume targets for the development and utilisation of renewable energy of the nation and each province,

25 "Target of China's Energy Structure in Future 15 Years: Renewable Energy Accounts for 16%" *Economic Daily* 18 June 2006.; "Long-Term Plan for the Development of Renewable Energy Takes Initial Form" *China Securities* (20 June 20) 2006.

autonomous region and municipality directly under the State Council will lag far behind the effective date of the *Renewable Energy Law* (January 1, 2006) and it is impossible to avoid the conclusion that the authority and operability of the law is being negatively affected to some degree.

Assurances for Investors in Renewable Energy

After the middle-and-long term total volume target for renewable energy development has been established, and the plan for renewable energy development and utilisation has been completed, an important task is to legally define the assurance measures and systems to support the target and plan.

The important assurance systems established according to the *Renewable Energy Law* include compulsory purchase systems, bid invitation systems, economic incentive systems and technical support systems.

Compulsory Purchase System

This system applies to grid-connections for electricity generated from renewable resources and fuel gas and heat produced with biotic resources, as well as the entry into fuel sales system of bio-liquid fuel. This system is an important measure to encourage market entities to invest in renewable energy, to enable enterprises involved in renewable energy to survive, and to develop and promote the industrialisation and commercialisation of renewable energy.

With respect to the grid-connections, Article 14 of the *Renewable Energy Law* clearly states that "[g]rid enterprises shall enter into grid connection agreement with renewable power generation enterprises that have legally obtained administrative license or for which filing has been made, and buy at full price the grid-connected power produced with renewable energy within the coverage of their power grid, and provide grid-connection service for the generation of power with renewable energy." Articles 19 and 20 stipulate the system of classified grid power price and the fee sharing regime: the grid power price of renewable energy shall be determined or adjusted by the competent price administrative department of the State Council in a way that is beneficial to the development and utilisation of renewable energy, and that is economically reasonable bearing in mind the differing characteristics of wind power, solar power, and small hydropower. The actual situation of different geographic areas and the level of technology development and utilisation of renewable energy must also be taken into account.

The difference between the expenses incurred by grid operators purchasing renewable power at the price determined under Article 19, and the expenses that

would be incurred in purchasing electricity generated with conventional energy, shall be shared in the selling price. Article 29 of the Law also stipulates that "[i]f the power grid enterprises breach Article 14 hereof and fail to purchase renewable power in full, which results in economic loss to the renewable power generation enterprises, such power grid enterprises shall be liable for compensation, and the state power supervisory institutions shall order them to make correction within a stipulated period of time. In case of refusal to make correction, a fine of less than the economic loss of the renewable power generation enterprises shall be imposed."

The *Renewable Energy Law* also provides for the connection of fuel gas and heat produced with biotic resources into the pipeline network, and for the sale of bio-liquid fuels. The Law stipulates in Articles 16 and 23 that "[i]f the gas and heat produced with biological resources conform to urban fuel gas pipeline networks and heat pipeline networks, enterprises operating gas pipeline networks and heat pipeline networks shall accept them into the networks. The price of renewable heat and natural gas that enters the urban pipeline shall be determined by price management and other related authorities in the principle of being beneficial to the development and utilisation of renewable energy and being economically reasonable. Oil-selling enterprises shall, according to the regulations of energy authorities of the State Council or people's government at the provincial level, include biological liquid fuel conforming to the national standard into its fuel-selling system." Articles 30 and 31 stipulate that "[i]n case that enterprises of natural gas pipeline network and heat pipeline network do not permit the connection of natural gas and heat that conform to the grid connection technical standards into the network, which results in economic loss to the gas and heat production enterprises, relevant enterprises shall be liable for compensation, and energy authorities of the people's governments at the provincial level shall order them to make correction within a stipulated period of time; in case of refusal to make correction, a fine of less than said economic loss shall be imposed against them. If oil-selling enterprises breach provisions and fail to include biological liquid fuel that conforms to the national standards into its fuel-selling system, which results in economic loss to the biological liquid fuel production enterprises, relevant enterprises shall be liable for compensation, and energy authorities of the State Council or people's governments at the provincial level shall order them to make correction within a stipulated period of time; in case of refusal to make correction, a fine of less than said economic loss shall be imposed against them."

The above compulsory purchase system and the price management and fee sharing systems are determined by the technological and economic characteristics of renewable energy. Because most of the renewable energy products cannot compete with conventional energy products, the above systems not only ensure the survival and development of the renewable energy industry, in the context of monopoly and

franchise energy selling networks, but also ensure that the whole country shares the additional expenses associated with the development of renewable energy. This gives effect to the principle of combining civil obligations with state responsibilities and the principle of fairness in law and policy.

With respect to similar legislation in developed countries, there are two kinds of compulsory measures for promoting grid-connected renewable power generation, namely Renewable Portfolio Standards and Feed-in Laws. Should China's legislation on renewable energy adopt a Renewable Portfolio Standard or Feed-in Laws? It was once a dilemma for the drafters of the law.[26]

The so-called Renewable Portfolio Standard means that in order to realise the mandated target of renewable energy development, each responsible entity (usually an electricity retailer) should, on the basis of the total volume target, bear a certain share of the burden in achieving the target. That is to say, every retailer has an obligation to buy a certain amount, or percentage, of renewable energy from renewable energy generators, with the price being determined by the market. Renewable portfolio standards are generally supported by a certificate system for tradable renewable energy. Under the certificate system for tradable renewable energy, the renewable energy power generators have two kinds of products for sale: the electric power they produce and the renewable energy certificates issued by the government regulatory agency. After the certificate system is established, the retailers meet the renewable portfolio standard by purchasing certificates from the renewable energy generators.[27]

The so-called Feed-in Law means that, in order to realise the total volume target for a country or region, the law forces retailers to purchase the renewable energy power produced by accredited generators at the price determined by the government, while the volume would be determined by the market accordingly. The operation of this system should go hand in hand with the government fixed pricing system and cost sharing system.

In summary, both systems, Renewable Portfolio Standard and Feed-in Law, are the results of government intervention in the market. The government imposes constraints on the free market to establish demand for renewable energy in the public interest and to ensure energy security, regional economic development and environmental protection. However, there are some significant differences between

26 Li Yanfang "System Fabrication and Option of Our Renewable Energy Law" (2005) *Journal of the Renmin University of China* at 133–136; Li Xia and Shi Ruiqiong "Research of Sustainable Development of Energy Economy and Legal System to Promote Power Generation with Renewable Energy" *Energy and Environment* (April 2005) at 5.

27 Gu Shuhua "Primary Research of China Renewable Portfolio Standard" (2003) 18 *Journal of Tsinghua University (Philosophy and Social Science Edition)* at 27–28.

these two measures. What the renewable portfolio standard establishes is a development model for renewable energy where "the government determines the volume and the market determines the price". This reflects the merits of a market economy, namely: encouraging investment; promoting technical progress and reducing the cost of renewable energy; and providing for a better integration of renewable energy into the conventional energy market. At the same time, the system also has the following obvious drawbacks: the renewable energy target may limit the size of the renewable energy sector; the uncertainty of the renewable power price creates a big risk for investors; renewable energy enterprises, which may have different levels of development and technical expertise, all compete in the same market which could lead to stronger enterprises establishing a production monopoly; and, finally, the implementation of effective supervision and regulation arrangements result in costs to the government.

By distinction, what Feed-in Laws establish is a development model for renewable energy power where "the government determines the price and the market determines the volume". The merits of this arrangement are: a fixed price and the guarantee of purchase of the energy generated helps investors to offset their costs and realise an income. This reduces investment risks significantly and attracts all kinds of investment entities to enter the area of renewable energy development and utilisation; defining different prices based on the different kinds of renewable energy generated in different areas not only promotes the development of diversified renewable energy sources, but also promotes their development in different geographical areas; and it is easy for the government to implement the payment of a simple and clear fixed price. This system also has its demerits, however, including: the realisation of the national or regional renewable energy target could be uncertain because the volume is determined by the market; without the market mechanism to determine the price for renewable energy, power generators and grid operators bear very little risk. Ultimately, the cost is passed on to consumers. It's unfair to the consumers and helps very little to encourage the enterprises to improve technologies and to manage their businesses efficiently. Furthermore, government pricing system can not suit the reality of the changing market situation and the actual value of the renewable energy.

A renewable portfolio standard is essentially a market-based mechanism while feed-in laws are government-driven.[28] Generally speaking, a renewable portfolio standard is appropriate in countries and regions where the liberalisation of the power industry is advanced; the related legal and regulatory mechanisms are mature and the renewal energy technology and market are well developed. Feed-in laws are

28 Li, note 26 at 136–138.

more appropriate in countries and regions where the power industry is less liberalised, the related legal and regulatory mechanisms are rather weak, renewable energy technology is backward, the market is fragile, and the renewable energy sector needs much more support from the government.

In consideration of the level of development of the renewable energy sector in China,[29] and the system's compatibility with other related systems,[30] Chinese legislators adopted feed-in laws rather than a renewable portfolio standard.

The Bid Invitation System

According to the provisions in Paragraph 3 of Article 13, Article 14 and Article 19 of the *Renewable Energy Law*, and in the context of feed-in laws, a bid invitation system should be imposed on all applicants applying for an administrative licence to construct renewable energy grid-connected generators. The project should be awarded to an applicant according to law. The grid operators in the area where the project is awarded should purchase all of the power generated by the project at the tender prices defined when the bid is awarded, but the tender prices should not be higher than the grid-connected power price of local similar renewable energy generation projects, as defined by the competent price administrative department of the State Council.

Economic Incentives

Articles 24, 25, and 26 of the *Renewable Energy Law* establish three kinds of economic incentives: special funds, interest-discount loans, and preferential taxation.

The government budget establishes a renewable energy development fund to support the following: scientific and technological research, the development of standards and support for renewable energy pilot projects; the construction of renewable energy projects for domestic use in rural and pasturing areas; the construction of independent renewable power systems in remote areas and islands; the undertaking of surveys, assessments of renewable energy resources, and the construction of relevant information systems; and the local production of the equipment used in the development and utilisation of renewable energy.

Financial institutions may offer preferential loans with financial interest subsidies to renewable energy development and utilisation projects that are listed in the national renewable energy industrial development guidance catalogue, and which conform to the conditions for granting loans.

29 Ibid.
30 Ibid at 138–140.

The Government grants tax benefits to projects listed in the renewable energy industrial development guidance catalogue. The specific methods for granting such benefits must be stipulated by the State Council.

The renewable energy industrial development guidance catalogue must be developed and published by the energy authority of the State Council, based on the national plan for the development and utilisation of renewable energy.

Technical Support

The *Renewable Energy Law* stipulates the regime for government support for renewable energy technology development in Articles 11 and 12.

Standardisation authority of the State Council must set and publicise the grid-connection technical standard for renewable energy electricity and the national technical standards for relevant renewable technology and products. For those technical requirements not dealt with in the national standard, relevant authorities of the State Council may establish relevant industry standards, which must be reported to the standardisation authority of the State Council for filing.

Scientific and technical research on the development, utilisation and commercialisation of renewable energy is listed by the government as a priority area for hi-tech development and hi-tech industrial development in the national program. Funding is allocated for the same purposes so as to advance technical development and utilisation of renewable energy, to reduce the production costs of renewable energy products, and to improve the quality of products. Education authority of the State Council must incorporate information about renewable energy into general and occupational educational curricula.

Major Obstacles to Implementing China's Renewable Energy Legislation

The life and soul of a law lie in its implementation. The implementation of legislation on renewable energy faces various kinds of restrictions and challenges, such as an understanding of the concept of renewable energy, available technologies, government administration, social acceptance and public participation etc. In general, what China renewable energy legislation has established is a model of renewable energy development based on government promotion and government control. Therefore, the following analysis on the obstacles impacting the implementation of the legislation on renewable energy is mainly centered on government-related issues.

Government Commitment to Renewable Energy

On February 28, 2005, the Renewable Energy Law was adopted through voting, with 162 approvals, 1 waiver and 0 opposing, showing that the legislature regards the promotion of renewable energy in China as an important issue.

In practice, although the central government clearly lists the development and utilisation of renewable energy as the preferential area for energy development, and encourages economic entities of all types to participate in the industry, some local governments adopt the attitude of "waiting until further research is conducted". The direct reason for this is that coal-fired power plants are usually bigger in terms of scale and investment, and boost local economic development and GDP growth more quickly than renewable energy projects. Local governments tend to underestimate the damage which conventional energy projects have on the environment, and are not sufficiently aware of the current urgency to develop the renewable energy sector.[31] In other words, many locat governments only consider the economic costs of energy production while ignoring the social and environmental costs.

More deeply, however, such tendency stems from local governments' development concept, that is, their concept of the manifestation of public achievement, and their alienation from their functions.

Unscientific Development Concepts and the Incorrect Concept of Political Merit

In the 1980s, the state put forward a development strategy of "placing focus on economic construction," in view of the urgent need to develop the economy and improve the people's standard of material and cultural life. The traditional GDP calculation method does not take into account costs related to resource degradation, environmental deterioration, or other social costs. When combined with a highly centralized "personal rule" political structure and the predominance of GDP as a supreme indicator for political merit, such a strategy induced local governments – especially some Party heads – to blindly pursue local GDP growth for their own self-interest, without showing concern for the social and environmental costs.[32]

31 Zhao, note 6.

32 Wang Jin and Wang Mingyuan "Chinese Environmental Legislation – Task Is Arduous and Road Ahead Long. Law in Tsinghua" in Gao Hongjun (ed) vol 6 (Tsinghua University Press: 2005) at 157–159.

Alienation and Dislocation of the Local Government from their Functions.

The original government function is to offset the shortage and malfunction of market mechanisms for the public benefits of the society. What a government considers should mainly include compulsory education, public health, environmental protection and other matters that the market does not regulate automatically. However, currently in China, local governments have their own independent economic interests and have become special market players. They tend to consider only local economic growth but disregard issues like sustainable development and environmental protection, which they regard as the concerns of the central government and society generally. In brief, local governments are increasingly adopting the philosophy that they should conduct their activities consistently with the goals of successful businesses.

Although central government's policies and guidelines must be implemented by local governments, the independent economic interests of local governments inevitably conflict with the central government's economic policies, including those on environmental protection and renewable energy development. Some local governments might publicly support central government's policies while privately opposing them, although some are openly resistant.[33] These deep-rooted conflicts should be addressed in order to realise state macro-regulation and administration.

Developing Complementary Measures and Regulations

The *Renewable Energy Law* is just a framework law in general and a dozen of complementary rules and regulations need to be formulated by the State Council or the people's governments at the provincial level.

Several complementary provisions have been promulgated recently, including:

- "Provisional Measures on Land-Use and Environmental Protection Management in the Construction of Wind Power Field Project" (by the National Development and Reform Commission (NDRC), Ministry of Land and Resources (MLR), State Environmental Protection Administration (SEPA) on August 9, 2005)
- "Renewable Energy Industrial Development Guidance Catalogue" (by NDRC on November 29, 2005)

33 "Getting Benefits Only by Disobedience? Analysis of the Phenomena of Local Government Defying Central Policies" <http://news.xinhuanet.com/politics/2006-09/13/content_5087316.htm> (7 October 2006).

- "Trial Methods for Management of the Price and Cost Sharing of the Electric Power Generated with Renewable Energy" (by NDRC on January 4, 2006)
- "Related Provisions on Management of Renewable Energy Power Generation" (by NDRC on January 5, 2006), and
- "Technology Standard for the Application of Solar Energy Water Heating System in Civil Construction (by the Ministry of Construction (MC) on January 1, 2006).

Six state standards have also been approved by the Standardisation Administration of China, including:

- "Technical Requirements to Grid-Combination of Photovoltaic System" [(GB/T 19939-2005), came into effect on April 1, 2006)
- "Technical Provisions for Wind Power Plants Connecting into the Power System", and
- "Technical Provisions for Geothermal Power Connecting into the Power System" and "Technical Provisions for Photovoltaic Power Plant Connecting into the Power System".

However, there are a lot of complementary provisions that are yet to be promulgated, such as:

- provisions for hydropower generation applicable to the *Renewable Energy Law* (to be formulated by the energy authority department of the State Council and submitted to the State Council for approval)
- the national long-and-middle term total volume target for the development and utilisation of renewable energy (to be formulated by the energy authority department of the State Council and submitted to the State Council for approval)
- measures for preferential taxation to the development projects of renewable energy (to be stipulated by the State Council)
- long-and-middle term target for the development and utilisation of renewable energy of each province, autonomous region or municipality directly under the State Council (to be determinded by the energy authority of the State Council through coordination with the people's governments of related provinces, autonomous regions or municipalities directly under the State Council), and
- plans for the development and utilisation of renewable energy (to be formulated by the energy authority of the State Council through coordination with the people's government of related provinces, autonomous regions or municipalities directly under the State Council).

These complementary rules and provisions are not only an essential part of China's legislation on renewable energy, but also an important precondition for the legislation to be enforced effectively. According to the *Renewable Energy Law*, formulation of these complementary rules and provisions is the legal obligation of related governmental departments. The shortage of the complementary provisions shows that further works need to be done for the successful implementation of China's legislation on renewable energy. Unfortunately, governmental departments are still incompetent in carrying out their legal functions. There are often no rules or regulations to follow in the process of implementing legislation and, as a result, the actual effectiveness of enforcing the renewable energy legislation is quite low.

Legislative Enforcement Mechanism

The *Renewable Energy Law* emphasizes government's role of macro-regulation and guidance as well as steering and managing the development and utilisation of renewable energy through administrative measures. Therefore, enforcement cannot really occur without positive action taken by the government.

As clearly shown by economic analysis, government intervention aimed at correcting market failure also has its own drawbacks,[34] and also needs to be effectively restricted and restrained. In this regard, the international community pays a great deal of attention to the important role of the public, particularly that of non-government organisations, in formulating and implementing environmental laws and policies. This emphasises the protection of people's legal environmental rights, especially the right of getting access to information and rights of participation, so as balance the conflicts interests of different stakeholders. Although the *Renewable Energy Law* stipulated in Article 9 that "in preparing the plan for the development and utilisation of renewable energy, opinions of relevant units, experts and the public shall be solicited and the scientific reasoning shall be done". However, given the scientific competence of the public and the state of democracy in China, this provision is really only a declaration of principle policy and cannot be regarded as an operable rule. With respect to the formulation of complementary rules and standards, the determination of the renewable energy targets, the approval of licences, and the supervision of law enforcement, the *Renewable Energy Law* does not vest rights of access to information and participation in the public. Therefore, China has not effectively engaged the public to assist it with law enforcement but is relying solely on the enforcement capabilities of government agencies.

34 D.W. Pearce and J.J. Warford *World Without End: Economics, Environment and Development* translated by Zhang Shiqiu et al; (China Financial and Economic Publishing House: 1966) 207–209; Zhang Fan *Economics on Environment and Natural Resources* (Shanghai People's Press: 1998) 4–5 and 13–27.

With respect to the management system, the *Renewable Energy Law* stipulates in Article 5 that "[t]he competent energy authority of the State Council must implement management for the development and utilisation of renewable energy at the national level. Relevant departments involved in science and technology, agriculture, water conservancy, land and resources, construction, environmental protection, forestry, marine and meteorology of the State Council are responsible for the management of the relevant development and utilisation of renewable energy within their authorities. Competent energy administrative departments of local people's governments above the county level are responsible for the management of the development and utilisation of renewable energy within their own jurisdiction. Relevant departments of local people's governments above the county level are responsible for the management of the relevant development and utilisation of renewable energy within their authorities." The Law also stipulates in Article 27 that "Power enterprises shall authentically and completely record and store relevant materials of renewable energy power generation, and shall accept the inspection and supervision of power supervisory institutions. Power supervisory institutions shall do the inspection in accordance with stipulated procedures, and shall keep commercial secret and other secret for inspected units."

This renewable energy supervisory and management system simply confirms the existing arrangements but does nothing to reform or correct existing problems such as multiple leadership, overlapping functions, multi-channel management, scattered finances, difficult coordination, low efficiency and confusion of management, and the weakness of state regulation and control. Moreover, along with government restructuring, the capacity of government departments charged with energy saving and renewable energy development and utilisation is weakened. Consequently, human resources are insufficient, the renewable energy agenda does not occupy a position of priority, and departments are unable to meet the demands of law enforcement on renewable energy. As it is, the Chinese government's ability to implement environmental laws and policies is generally deficient.

The Future Direction of China's Renewable Energy Legislation

The *Renewable Energy Law* was formulated with reference to overseas experiences and then related to situation of China. It has been well received by all sectors of society, especially the industrial sector. As a framework law, this Law has established, in principle, a mechanism for determining the total volume targets, a corresponding assurance system and a law enforcement strategy for the development of renewable

energy. There can be no doubt that this is a new dawn for the development of China's renewable energy sector. However, in order to sustain this initiative, the related complementary rules and regulations need to be developed, the effective enforcement of the legislation on renewable energy needs to be strengthened, the legislation needs to be further modified and perfected, the structures of government needs to be reformed, and the renewable energy technologies need to be improved. Furthermore, the renewable energy market needs to be expanded and a greater societal engagement with renewable energy technologies needs to be promoted. Whether or not all of these factors will materialize is still uncertain.

In the author's opinion, perfecting China's renewable energy administration system should go hand in hand with reforms in both government and the energy sector. The general trend should be to integrate functions of the relevant energy departments by establishing a powerful energy administration, much like a Ministry of Energy, at the national level.

The substance of renewable energy legislation should be oriented to strengthening market mechanisms and the role of the civil society, so that the 'three hands', i.e., the government, the market, and the civil society, cooperate and function jointly, so as to give maximum consideration to social equity while upgrading the economic efficiency and sustainable development of the renewable energy industry. For this reason, the public should be entrusted with legal standing and rights in policy-making and implementation of renewable energy laws. Moreover, when the development of renewable energy reaches a stage where it can be based on market mechanisms, the current feed-in law system should be replaced. At this stage, more government intervention is appropriate. With the development of both the renewable energy industry and the market, renewable portfolio standards or some other market-based system that is helpful to improve economic efficiency should be introduced.

Furthermore, additional laws or regulations should be formulated within the framework of the *Renewable Energy Law* and its complementary provisions to encourage the use of different types of renewable energy, such as small-scale hydropower, wind energy, biomass, or solar energy, according to their level of technological development and market orientation.