
ISSUE FOCUS

Problems and Adjustments of Renewable Energy Legislation in China*

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The abandonment of wind and PV power has become the Achilles heel that restricts the development of renewable energy in China, which is associated with institutional defects in China's Renewable Energy Law. As a priority area in energy development, renewable energy is not substantialized. Instead, it is undermined because the guarantee system for purchasing electricity, generated by the use of renewable energy resources, in full amount, is alienated by lower-level laws. The unestablished mandatory legal obligations and responsibilities in power grid transmission networks lead to difficulties in renewable energy power generation, transmission, and accommodation. Due to the lack of continuity and stability in the feed-in tariff and subsidy policies for renewable energy, investors cannot have reasonable expectations. China's Renewable Energy Law must be remedied to correct these existing institutional defects, and to solve the problem of wind and PV power abandonment in order to promote the healthy development of renewable energy.

Keywords

China Renewable Energy Law, Institutional Defects, Power Grid Mandatory Investment Obligation, Legislative Adjustment

* Although the term 'renewable energy' in Article 2 of China's "Renewable Energy Law" includes wind energy, solar energy, hydropower, biomass energy, geothermal energy, ocean energy, and other non-fossil forms of energy, this paper will focus on the legal issues in the development and utilization of two types of non-hydro renewable energy such as wind and solar power.

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I. Introduction

The sustainable development and utilization of renewable energy, reshaping the energy supply and consumption structure, mitigating and adapting to greenhouse gas emissions, and tackling climate change—all these have become the world's general consensus for the concerted action necessary to achieve energy transformation. Almost all the signatories of the 2015 Paris Agreement on Climate Change set development goals for renewable energy. Since the 1980s, China has encouraged to develop and implement policies of renewable energy, as an important source of energy production and consumption. However, it was not until 1996 that the legislative process for renewable energy policy was implemented for the first time with the enactment of the Electricity Law. It was mainly based on 'soft' encouragement and advocacy for laws and regulations.¹

The Renewable Energy Law, which was implemented in 2006, set out some mandatory legal norms.² The revised Renewable Energy Law of 2009 further clarified and improved upon the major issues with the development goals and planning for renewable energy.³ In addition, other legislative organs in China formulated the normative documents for the implementation of support for the Renewable Energy Law, and established a complete rules system with the Renewable Energy Law as the backbone.⁴

¹ The PRC Electricity Law lays down such expressions as 'encourage' and 'support.' Article 5, paragraph 2 reads: "The State encourages and supports the use of renewable energy and clean energy for power generation." Article 48 reads: "The State promotes the development of hydropower resources and the construction of small and medium-sized hydropower stations in rural areas in order to promote rural electrification. The state encourages and supports the use of solar energy, wind power, geothermal energy, biomass energy and other energy sources in rural areas to make rural power supply construction and increase the rural power supply." See The PRC Electricity Law [中华人民共和国电力法], available at http://www.npc.gov.cn/wxzl/gongbao/2015-07/03/content_1942878.htm (last visited on Sept. 6, 2017).

² The 2006 Renewable Energy Law covers such subject matters as the investigation of renewable resources and development plans (Section 2), the obligation of the Grids' full purchase of renewable energy electricity (Article 14 of Section 4), tariffs on renewable energy projects, and the distribution of costs for the full purchase of renewable electricity by the Grids (Articles 19-20 of Section 5) and the corresponding liabilities due to a violation of the aforesaid obligations (Section 7).

³ The 2009 Renewable Energy Law states that the plans for developing renewable energy at both national and provincial levels should be made based on energy development strategies and technological situation, and should specify the objects to be developed, main tasks, key projects, supporting measures, etc. (Articles 8-9); the cost to the Grids incurred by the full purchase of renewable energy electricity should be managed by the development fund for renewable energy rather than being distributed among the relevant parties (Article 20).

⁴ Following the adoption of the 2006 Renewable Energy Law and its 2009 amendment, China's Commission for Development and Reform, the National Energy Administration, and the Ministry of Finance enacted the following measures: Rules on the Generation Tariff of Renewable Energy and its Distribution (2006); Ordinance of Management

For a decade, the Renewable Energy Law has been working positively to promote China's renewable energy development. However, it cannot be ignored that due to the superposition of various factors, China's renewable energy development is facing significant challenges, such as the difficulties of electricity generation from renewable energy sources and the abandonment of wind and photovoltaic ("PV") power. As these problems are linked to the inadequate supply system and the congenital defects in the Renewable Energy Law, there is a call for another revision of the Law. Today, it is of great significance for China to achieve its renewable energy development goals and complete energy transformation through legislative adjustment. In this discourse, the primary focus will be on the analysis of the most critical problems in China's renewable energy development. Finally, recommendations will be put forward that can solve the current institutional defects in the renewable energy legislation.

This paper is composed of five parts including a short Introduction and Conclusion. Part two will discuss the current problems which hinder the further development of renewable energy in China. Part three will examine the legislative and institutional defects of China's Renewable Energy Law which are behind the aforementioned problems. Part four will advance some key suggestions for legislative adjustments to China's Renewable Energy Law based on the analyses of the previous parts. Part five provides the conclusions and summarizes the viewpoints on improving the legislation of renewable energy in China.

II. The Abandonment of Wind and PV Power: The Achilles Heel Restricting China's Renewable Energy Development

In the late 1980s, China began to develop and utilize renewable energy in the modern sense. Comparing with traditional fossil energy, however, renewable energy would create some anomalies in technological sector and economic costs. First, as renewable energy was mainly based on hydroelectric power generation, non-

on Renewable Energy Generation (2006); Provisional Rules on Management on Renewable Development Fund (2006); and Provisional Rules on Management on Distributed PV Generation Projects (2013). See Xiejun Yang, *On the Developing Trend of Chinese Legislation on Energy: Basing on the Analysis on the Enact and its Amendment of Renewable Energy Law*, [论中国能源立法的走向: 基于《可再生能源法》的制定和修改的分析], 6 J. NANJING U. (Philosophy, Humanities & Social Science) [南京大学学报 (哲学人文科学社会科学)] 49 (2012).

water renewable energy sources were very few. Second, because of the difficulties in distribution system, renewable energy was used mainly as a complementary and alternative option to the centralized energy technology system. That is why China's renewable energy development was slow in the initial stage.⁵

With the introduction and revision of the Renewable Energy Law, China could rapidly develop renewable energy. According to the latest data released by the National Energy Administration, as of June 2017, the national PV power generation capacity totaled 101.82 million kWh.⁶ Among them, the centralized solar power plant generated 84.39 million kWh, the distributed PV power was 17.43 million kWh, and the PV power generation capacity was 51.8 billion kWh, a yearly increase of 75 percent.⁷ By the end of 2016, the installed capacity of wind power had increased by 19.3 million kWh, the cumulative installed capacity reached 149 million kWh, and the wind power generation capacity was 241 billion kWh, accounting for 4 percent⁸ of the total generating capacity. It is to be noted that, in this period, greenhouse gas emissions were also declining remarkably.⁹

While China's renewable energy development has made remarkable achievements, it is also faced with the serious problem of the abandonment of wind and PV power. From May to June of 2013, the law enforcement inspection team of the National People's Congress ("NPC") Standing Committee examined the implementation of the Renewable Energy Law. In this course, the team found that there existed problems with the transmission and accommodation of wind power, PV power, and hydropower in different places.¹⁰ It was particularly recognized that wind and

⁵ Dinghuan Shi, *The History and Development of Renewable Energy in China* [中国可再生能源的发展历史], 37:16 J. MECHANICAL DESIGN & MANUFACTURING ENGINEERING [机械设计与制造工程] 11 (2008).

⁶ China National Energy Administration, Information on the Construction and Operation of Photovoltaic Power Generation in the First Half of 2017 [2017年上半年光伏发电建设运营简况], available at http://www.nea.gov.cn/2017-08/04/c_136499745.htm (last visited on Aug. 5, 2017).

⁷ *Id.*

⁸ China National Energy Administration, 2016 Wind Power Grid Connection and Operation Situation [2016年风电并网运行情况] (Jan. 26, 2017), available at http://www.nea.gov.cn/2017-01/26/c_136014615.htm (last visited on July 10, 2017).

⁹ According to BP Statistical Review of World Energy, China's carbon dioxide emissions in 2016 fell by 0.7 percent, with almost no growth for three consecutive years, well below the average annual growth rate of 10 years (4.2%). In addition to the slowdown in GDP growth, the deeper causes of slowing carbon emissions growth are due to the decline in GDP carbon intensity brought by the accelerated adjustment of energy structure and the increase in energy efficiency. See *Carbon Dioxide Emissions*, BP STATISTICAL REV. OF WORLD ENERGY (July 7, 2017), available at <http://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-Statistical-review-of-world-energy-2017-full-report.pdf> (last visited on July 20, 2017).

¹⁰ Changzhi Chen (Vice Chairman of the Standing Committee of China National People's Congress), Report of the Law Enforcement Inspection Group of the Standing Committee of the National People's Congress on the Implementation of the Renewable Energy Law of the People's Republic of China [全国人大常委会执法检查组关于检查可再生能源

PV power as well as hydropower with large installed capacity in the ‘three Norths’ (northwest, northeast, and north China) and the southwest region were abandoned.¹¹

Lately, the situation has been improving gradually, but it is not yet ideal. According to the 2015 China Renewable Energy Power Development Monitoring and Evaluation Report released for the first time by the China National Energy Administration, in the first half of 2017, the amount of abandoned wind power was 33.9 billion kWh in 2015, a yearly increase of 21.3 billion kWh; and 49.7 billion kWh in 2016, with the rate of wind power abandonment at 43 percent in some provinces of the ‘three Norths’ region.¹² In this period, the abandoned PV power was 3.7 billion kWh, with the rate of abandonment dropping slightly, but the average value was still over 20 percent.¹³ The abandonment of wind and PV power has thus become the Achilles’ heel which constraints China’s renewable energy development.

The negative impacts of abandoning wind and PV power is self-evident. They are as follows. First, it causes great waste of the investment in renewable energy, which has seriously damaged the interest and enthusiasm of investors. According to the estimates from authorities, in 2015, the abandoned wind power was alone 33.9 billion kWh, causing direct economic losses of about RMB 17 billion.¹⁴ Due to the phenomenon of abandonment during construction, coupled with the gradual weakening of feed-in tariffs and delay payment of tariff subsidies, investors are bound to become discouraged. In the long run, the prospects for renewable energy are grim.

Second, environmental degradation cannot be alleviated. One of the purposes for developing renewable energy is to replace traditional fossil fuels, and, to a certain extent, reduce the emissions of greenhouse gases and pollutants. As the losses from abandoned wind power will inevitably be compensated by conventional fossil-fuel energy generation, however, according to the calculation of generating 3 kilowatt-hours by 1 kg of standard coal, in 2015, abandoned wind power eventually caused the burning of 11.35 million tons of standard coal, emitting 34 million tons of carbon

法实施情况的报告] (Aug. 26, 2013), available at http://www.npc.gov.cn/npc/xinwen/2013-08/27/content_1804270.htm (last visited on Aug. 5, 2017).

¹¹ *Id.*

¹² National Energy Administration, 2015 China Renewable Energy Power Development Monitoring and Evaluation Report, available at http://zfxgk.nea.gov.cn/auto87/201608/t20160823_2289.htm?keywords= (last visited on Sept. 9, 2017).

¹³ BP Statistical Review of World Energy, *supra* note 9. See also Chen, *supra* note 10.

¹⁴ Chang Tan & Rui Li, Annual Data on Renewable Energy Released by China for the First Time: Serious Situation of Wind and PV Power Abandonment [国家首次发布可再生能源年度数据: 弃风弃光形势严峻], available at <http://www.infzm.com/content/119249> (last visited on July 12, 2017).

dioxide, sulfur dioxide, nitrogen oxides, dust, and other pollutants.¹⁵ Environmental nonprofit organizations even sent a letter to the China State Grid Corporation, claiming that they would bring about civil environmental public interest litigation in accordance with the law.¹⁶

The problem of abandoning wind and PV power in China's renewable energy development is due to multiple factors. Basically, it is related to not only the intermittency, instability, and anti-peak regulation characteristics of renewable energy generation itself, but also the imbalance in the power supply and demand at the current stage of the new normal economy in China.¹⁷

From a regulatory point of view, however, the main causes are as follows. First, power grid construction lags behind and transmission capacity is limited. The regions with abundant renewable energy resources lay in the western provinces, whose economy is underdeveloped and local consumption is limited.¹⁸ The resource endowment of renewable energy and the geographical distribution of power load centers are dislocated. The installed capacity of wind power and PV capacity respectively account for 77 percent and 41 percent of China's 'Three Norths' region, but, due to the backward local economies and social development, it is difficult to consume this power locally.¹⁹ Local investment in power grid enterprises is still insufficient and grid infrastructure construction is still lagging. As a result, it would be difficult to connect the renewable energy power to the grid.²⁰

Second, China's construction of the electricity market is today in its initial stages and the scale of power exchange among provinces and regions is insignificant in quantity. In this situation, it is unable for China to undermine the geographical

¹⁵ *Id.*

¹⁶ On August 15, 2016, the China Biodiversity Conservation and Green Development Foundation sent a letter to the State Grid, saying that due to the serious "abandonment of wind and PV power" behavior of the state grid in many places, the development of local wind power and the photovoltaic industry were restricted, the emissions from coal-fired power generation had increased, and thus atmospheric pollution was aggravated. The State Grid Corporation should pay attention to solving this problem, otherwise, legal measures would be taken in accordance with the law to completely solve the problem of "wind and PV power abandonment." See The China Biodiversity Conservation and Green Development Foundation sent a letter to the State Grid requiring the State Grid to solve the issue of wind and PV power abandonment [中国绿发会致函国家电网 诚请解决“弃风弃光”问题], available at <http://www.chinapower.com.cn/gfhyyw/20160818/47889.html> (last visited on July 20, 2017).

¹⁷ Xiangqian Gong, *Legal Structure of Renewable Energy Priority - Analysis based on the Phenomenon of "Wind Power Abandonment and PV Power Limitation"* [可再生能源优先权的法律构造-基于“弃风限光”现象的分析], 17:1 J. CHINA U. GEOSCIENCES (Social Science Edition) [中国地质大学学报(社会科学版)] 29-30 (2017).

¹⁸ See *The Police Hindrance for Local Consumption for Renewable Energy Electricity Must Be Resolved* [风光电“就地消纳政策性障碍待除”, XINHUANET, Aug. 24, 2015, available at http://news.xinhuanet.com/energy/2015-08/24/c_1116345296.htm (last visited on Sept. 9, 2017).

¹⁹ *Id.*

²⁰ *Id.*

dislocation in the distribution of renewable energy resources and power load centers through the broad power market. Although China has introduced reforms for accelerating construction in the electricity market, it still focuses on the provincial electricity market, so that cross-provincial and cross-regional power exchange remains limited. Thus, the renewable energy power generation capacity in the ‘three Norths’ region cannot be fully released.²¹

III. The Institutional Defects in China’s Renewable Energy Law

It is widely agreed that economic and technological factors are not the fundamental causes of China’s current problem of abandoning wind and PV power. Instead, the source of the problem can be traced to the law.²² Law enforcement and the judicial process would both have strong influence on the legal effect in society. Since these two mechanisms can only operate in the legislative framework, more attention should be paid to the legislation itself. The main institutional defects of the Renewable Energy Law are as follows.

A. The Priority Status of Renewable Energy

Article 4 of the Renewable Energy Law states that: “China lists the development and utilization of renewable energy as a priority area for energy development.” It also stipulates that General Principles (Chapter 1) have the status of being the basic principles of the Renewable Energy Law. These basic principles, however, are not fully reflected in the other chapters through specific rules, so that the development and utilization of renewable energy may have a weak position in energy development planning, project approval or filing, power grid supporting construction, grid-connected absorption, and other aspects, when compared to traditional fossil energy and nuclear power.

More seriously, the State Council has not strictly enforced the priority dispatching by power grid enterprises and the system of guarantees for purchasing electricity generated by the use of renewable energy resources in full amount as determined

²¹ China State Grid, *The abandoned wind and PV power was up to 46.5 billion kilowatt hours in 2016* [2016年弃风弃光电量 达465亿度], available at <http://www.es.cn.com.cn/news/show-405805.html> (last visited on July 12, 2017).

²² Gong, *supra* note 17, at 30.

by the Renewable Energy Law.²³ Apart from that, in this case, the upper-level law is undermined by the lower-level law, which violates the constitutional provisions of the Law on Legislation of China.²⁴ Article 14 of the Renewable Energy Law clearly stipulates that: “The state applies the system of guaranteeing the purchasing of electricity generated by using renewable energy resources in full amount.” It also authorizes the energy supervisors of the State Council to formulate specific measures for the priority dispatching by power grid enterprises and the purchasing of electricity generated by using renewable energy resources in full amount.²⁵ If the power grid enterprises fail to perform or comply with the obligations of purchasing electricity generated by using renewable energy resources in full amount, they shall be responsible for civil compensation to the renewable energy generation enterprises with severe administrative penalties.²⁶ In 2007, the China National Development and Reform Commission of the Ministry of Environmental Protection and other authorities jointly promulgated the “Energy-saving Power Dispatching Method (Trial).”²⁷ In addition, the former State Electricity Regulatory Commission developed the Regulatory Measures for Grid Enterprises’ Full Purchase of Renewable Energy Electricity.²⁸

The 2007 Energy-saving Power Dispatching Method (Trial) established the principle of priority dispatching of renewable power generation resources and set the sequence of generating units according to the level of energy consumption and pollutant emission of the various types of generating units.²⁹ Here, wind, solar, ocean, water, and other renewable energy generating units are ranked first, which is the main ground for the dispatching of energy-saving power generation.³⁰ However,

²³ Even the electricity generated by renewable energy plants is not connected with Grid at some provinces in order to safeguard the economic benefits of coal-fired power plants. *See supra* note 18.

²⁴ According to Article 88 of the Law on Legislation of China, the law shall prevail over national regulation, local regulation, and ordinances.

²⁵ Renewable Energy Law art. 14.2.

²⁶ *Id.* art. 29. It stipulates: “If the power grid enterprises fail to complete the purchasing of electricity generated by using renewable energy resources according to the regulations, resulting in economic losses for renewable energy producers, they shall be liable for compensation, and be ordered by the State Electricity Regulatory Commission to make corrections within a prescribed time limit; those who refuse to make corrections shall be punished with a fine of less than twice the economic loss of renewable energy power generation enterprises.”

²⁷ *See* Energy-saving Power Dispatching Method (Trial) [节能发电调度办法(试行)], available at http://bgt.ndrc.gov.cn/zc/b/200708/t20070828_498202.html (last visited on Sept. 9 2017).

²⁸ *See* Regulatory Measures for Grid Enterprises’ Full Purchase of Renewable Energy Electricity [电网企业全额收购可再生能源电量监管办法], available at http://www.gov.cn/ziliao/flfg/2007-08/01/content_702636.htm (last visited on Sept. 9 2017).

²⁹ The Energy-saving Power Dispatching Method (Trial), arts. 1 & 4-5.

³⁰ *Id.*

the Renewable Energy Law enforcement inspection team of the NPC Standing Committee found that many places had not yet completely implemented energy-saving power generation dispatching and still adopted annual power generation plan management.³¹ It led the renewable energy generating units to be prioritized giving way to the thermal power unit ranking at the bottom.³²

Following the adoption of the Renewable Energy Law, the Regulatory Measures for Grid Enterprises' Full Purchase of Renewable Energy Electricity stipulates the supervision and management of grid enterprises' full purchase of renewable energy electricity. In 2016, however, the China National Development and Reform Commission formulated the Regulation regarding the Mandatory Purchase of Renewable Power Generation, according to which the annual power generation of the renewable energy grid should be divided into two parts: the guaranteed purchase of power and market trading power.³³ The market trading power shall be connected to the power grid in competing price with the other types of power generation from renewable power enterprises or projects through power trading institutions. Meanwhile, the purchase of the power shall be guaranteed by the installed capacity of the government-decided purchase.³⁴

Seven years after the promulgation of the Renewable Energy Law, the National Development and Reform Commission of China shifted the "guaranteed purchasing of electricity generated by the use of renewable energy resources in full amount" to be 'specific' to the aforementioned non-guaranteed purchasing in the name of authorization, which completely deviated from the legislative intent of the system of guarantees for the purchase of electricity generated by the use of renewable energy resources in full amount.

B. Lack of Continuity and Stability in Established Systems

As the system of guaranteeing the purchase of electricity generated by using renewable energy resources in full amount determined by the Renewable Energy Law of China is alienated or undermined by the lower-level law, the continuity and stability of energy-saving power generation dispatching system are destroyed and the reasonable expectations of investors are harmed. At the same time, the costs

³¹ *Supra* note 10.

³² *Id.*

³³ See Regulation Regarding the Mandatory Purchase of Renewable Power Generation [可再生能源发电全额保障性收购管理办法], available at http://www.ndrc.gov.cn/zcfb/zcfbtz/201603/t20160328_796404.html (last visited on Sept. 9, 2017).

³⁴ Regulation regarding the Mandatory Purchase for Renewable Power Generation, arts. 3, 5-6 & 11.

of renewable energy power generation are usually higher than that of traditional fossil fuels such as coal, gas, etc. Therefore, all countries are motivating investors to develop and invest in renewable energy through preferential feed-in tariffs and electricity price subsidies.³⁵

Feed-in tariffs are an effective measure for the countries to encourage the development and utilization of renewable energy. From a global perspective, the renewable energy preferential feed-in tariff usually adopts three models: long-term feed-in tariffs; franchise bid price; and market price + green power certificate price.³⁶ China's Renewable Energy Law established the government pricing of the electricity price and the government guidance price with a certain market formation of renewable energy power generation projects.³⁷ The former is determined by the government electricity price authority according to the types of renewable energy power generation projects (wind and PV power generation) and regional renewable energy endowments (wind power is divided into four categories and PV power is divided into three categories of resources), and timely dynamic adjustments. The latter is specifically applicable to the tender price of projects that need to obtain an administrative license. Also, the investors should be determined through the tender, but should not be higher than the above level of government pricing (wind power projects are only subject to government guidance price),³⁸ similar to the long-term feed-in tariffs and franchise bid price of other countries.³⁹

The electricity price authorities have reduced the price of renewable energy power generation almost every two years; the price has been so far adjusted 6 times. The average price of wind power in the category 4 resource area fell by 20 percent, and that of PV power in category 3 fell by about 30 percent.⁴⁰ Although the previous tariff adjustments do not have a retroactive effect, it caused unfair treatment to the investors, which could lead them to unstable and unreasonable expectations.

At the same time, in order to reduce the cost of power grid enterprises to purchase renewable energy power, the electricity pricing departments maintain

³⁵ Yanfang Li, *The Institutional Building and Choice of China's Renewable Energy Law* [我国《可再生能源法》的制度构建与选择] 1 J. RENMIN U. CHINA [中国人民大学学报] 135 (2005).

³⁶ Qiankun Wang, Lili Jiang & Qionghui Li, *Feed-in Tariff Mechanism of EU Renewable Energy Generation and the Implications for China* [欧盟可再生能源发电上网电价机制及对我国的启示] 30:12 RENEWABLE ENERGY [可再生能源] 110 (2012).

³⁷ The types of renewable energy prices can be categorized into the government guidance price and the bidding price; in no case, the former shall be higher than the later. See Renewable Energy Law art. 19.

³⁸ Renewable Energy Law art. 19. See also The Pilot Scheme for the Management of Renewable Energy Power Generation Price and Cost Allocation, arts. 5-6

³⁹ *Id.*

⁴⁰ It is calculated by the author according to the change of the prices.

that the part of renewable energy tariffs higher than that of the desulfurization benchmarking of local coal-fired units, can be subsidized by the renewable energy development fund.⁴¹ For renewable energy power generation projects, the cost of the desulfurization benchmarking for local coal-fired units cannot cover their costs, so that subsidies are an important concern for the return on investment. As of the first half of 2016, the gap in renewable energy subsidies was RMB 55 billion; experts expect that the cumulative shortfall would reach more than RMB 200 billion by 2020.⁴² Considering this serious delinquency, the only means was a deferred payment at present, which would greatly discourage the enthusiasm of investors.

C. The Compulsory Investment System of the Transmission Network

The key to developing renewable energy is power transmission and consumption. At present, the problem of abandoning wind and PV power is largely due to insufficient investment in the transmission network infrastructure of the power grid enterprise, which leads to an insufficient release in the power generation capacity of renewable energy projects.

Although the Power Law requires the synchronous development of the power supply and power grid,⁴³ it does not specify the compulsory investment obligation and legal responsibility of grid enterprises. Article 14 of the Renewable Energy Law stipulates that: “Grid enterprises should strengthen power grid construction and expand the scope of renewable energy power allocation.” However, there is no corresponding clause in terms of legal liability. Due to the lack of a compulsory investment system in the power grid, China’s power grid infrastructure has long lagged behind that of the power supply and the lack of transmission capacity of the power grid has restricted the development of China’s power industry.⁴⁴

Under the traditional system of the vertical integration of power generation, transmission, distribution, and sale, power enterprises have an impulse to invest independently for the sake of their own economic interests. After the unbundling of power plants and power grids, however, the grid enterprises naturally inhibited the

⁴¹ Renewable Energy Law art. 24.

⁴² Yuechun Yi, *The cumulative shortfall will reach more than 200 billion yuan by 2020*, [2020年我国可再生能源补贴缺口累计将高达2000多亿元]. See also CHINA ENERGY NEWS [中国能源报], available at <http://news.bjx.com.cn/html/20161209/795588.shtml> (last visited on Aug. 6, 2017).

⁴³ Power Law art.10.

⁴⁴ According to the State Grid itself, the insufficient investment on network infrastructure has greatly hindered the development of renewable energy. See *The lagged development of Grid hinders the consumption of new energy* [电网发展滞后制约新能源消纳], available at http://epaper.bjnews.com.cn/html/2015-12/23/content_614986.htm?div=-1 (last visited on Oct. 6, 2017).

autonomy of grid investment. In the new round of power system reform in China, particularly, the power grid enterprise is only positioned as a pure transmission and distribution service provider. Here, its revenue is no longer derived from its monopolistic purchase and sale price difference, but only from the service charge in accordance with the transmission and distribution price approved by the government. As a result, its enthusiasm in grid investment is further weakened.

The government will determine the transmission price according to the approved cost and reasonable income of the grid operating enterprise. Therefore, the authorized cost of the approved tariff will set up the price of power transmission and the scale of transmission revenues will depend on the quantity of transmission power and price. Renewable energy power generation projects are usually far away from the electricity load center. Due to this long transmission distance, huge loss and limited cross-provincial and regional power transactions, the investment in a transmission network is huge and the scale benefit is poor. If a compulsory legal obligation to invest in the transmission network is not established and appropriate incentive measures are not taken to ensure a reasonable return on investment, the problems of renewable energy power generation and transmission cannot be fundamentally solved.

IV. Legislative Adjustment of China's Renewable Energy Law

As China's energy authorities has paid attention to the abandonment of wind and PV power in renewable energy with concern, the Secretary of NEA put forward the goal of limiting the wind and PV power abandonment rate within 5 percent in the 'three Norths' region and eliminating the abandoning wind and PV power in other areas by 2020.⁴⁵ If the institutional deficiencies in the Renewable Energy Law are not remedied and corrected, however, these goals will inevitably become a castle in the air.

Legislation (including law amendment) is necessary to solve the problems that are prevalent in social and economic fields in a certain period of time. Because the problems in renewable energy development and utilization are reflected in the

⁴⁵ See NEA Secretary: *Solving the problem of the abandonment of wind and PV power through three key measures* [能源局局长: 三举措解决好弃风弃光问题], STCN [证券时报网], Mar. 10, 2017, available at <http://finance.sina.com.cn/stock/t/2017-03-10/doc-ifychavt2278893.shtml> (last visited on Sept. 10, 2017).

large-scale abandonment of wind and PV power, an in-depth analysis of the causes of the difficulties in power consumption should be comprehensively conducted. The author would argue that the reasons for this can be divided into four aspects: legislation, law enforcement, justice, and technology. Unless a judicial issues is due to the lack or ambiguity of institutional supply, it should be addressed through strengthening and improving the law enforcement with justice. In order to urgently promote technological innovation, the incentive system can be created. If the present problems which impair the further development of renewable energy in China only arose out of the enforcement of law and judicial practice, they could be resolved by the strengthening and improving of law enforcement and judicial practice. In the case of a shortage of institutional supply and ambiguity in the legal system itself, however, it is necessary to rectify and create an innovative legal regime which would be used to resolve these tough issues. Therefore, the current Renewable Energy Law in China should be amended as follows.

First, it is necessary to amend the purpose of legislation to more firmly protect and guarantee the legal rights and interests of the subjects for renewable energy development and utilization. Such amendment should be reflected in the specific system and legal provisions. Article 1 of the current Renewable Energy Law clarifies the purpose of legislation as,

to promote the development and utilization of renewable energy, increase the energy supply, improve the energy structure, ensure energy security, protect the environment, and achieve sustainable economic and social development.

However, the specific rules and regulations in the following chapters are almost entirely about the obligation and responsibility of the administrative organs. Actually, there are very few provisions concerning the subjects of renewable energy exploitation and utilization. Whether or not the legitimate rights and interests of these subjects can be protected is directly related to the sustainable development of renewable energy. It should be reflected in the legislative purpose of the Renewable Energy Law and supplemented by substantive provisions in the corresponding chapters as follows.

- (1) During renewable energy tariff adjustment, we should not simply consider technological progress and cost reduction, but also the green transformation and ecological protection of the energy structure, making an effort to maintain its long-term stability, stabilize investors' reasonable expectations, and encourage investment activities in renewable energy.

- (2) We should adopt competitive methods such as bidding and auction to determine the price of electricity and the level of subsidies for renewable energy projects; establish the costs of renewable energy power generation through market mechanisms; and sign long-term contracts to maintain their stability.
- (3) We should establish a system of compulsory and voluntary purchase of green power certificates; change the current system of voluntary subscription to green power certificates without distinguishing the subject; clarify the compulsory subscription obligations of government organs and state-owned enterprises and institutions; and carry out green power certificate transactions as soon as possible.⁴⁶ In addition, traditional fossil energy producers such as coal-fueling plants should be stimulated to realize their electricity quota for non-water renewable energy, guarantee the interests of renewable energy producers, and encourage users to buy and consume renewable energy power.
- (4) Through public financial investment and guidance, tax incentives and other measures, we should promote power grid enterprises to increase investment in the transmission network, and ensure them a reasonable income.

Second, the medium and long-term goals and plans of renewable energy development and utilization should be coordinated with other types of plans and programs. The moderately advanced development of the electric power industry is the basic principle of the Electric Power Law.⁴⁷ One of the major causes of the current abandonment of wind and PV power is that the targets and program of renewable energy development are in fact disadvantaged by the development goals and program of other energy types, so that the power generation capacity of renewable energy projects cannot be adequately released. In addition, the development and utilization objectives and planning of renewable energy are closely linked to overall social and economic development planning, urban and rural planning, land use planning, industrial development planning, and other types of energy development plans. If divorced from or not compatible with these types of planning, they will inevitably lead to problems such as land and power grid matching in the development and utilization of renewable energy. Therefore, we must first address

⁴⁶ As of 2017, the Chinese governmental authorities encourage regional governments at all levels, enterprises, social institutions and individuals to voluntarily subscribe for green power certificate. Also, the green power certificate compulsory trading [绿色电力证书强制约束交易] will be started in 2018. See Notice on the Implementation of Renewable Energy Green Power Certificate Issuance and Voluntary Subscription Trading System (China National Development and Reform Commission of the Ministry of Finance and the National Energy Administration), art. 1

⁴⁷ Power Law art. 3.

the coordination of multiple objectives and planning, and let them play a leading role.

Third, a mandatory investment system should be established in the supporting grid by power grid enterprises. Due to the high monopolization of the transmission network and its oligarchic legal status, there are extremely few investors. Currently, only the State Grid Corporation, China Southern Power Grid Corporation, and a small number of other local power grid enterprises are investing in power grid. It is different from the power generation side with a large number of investment entities. Without mandatory obligations and legal liabilities for investment in construction of the supporting power grid, the abandonment of wind and PV power caused by network restrictions will only intensify. Of course, while stipulating these obligations and responsibilities, given the highly intensive investment in the grid, its lower rate of investment return, and the role of the grid as a system operator undertaking power transmission and distribution in the future, an incentive system should be created to promote investment and construction of the power grid enterprises and ensure them a reasonable investment return.

Fourth, there is an urgent need to improve the legislative framework to guarantee the purchase of electricity generated by the use of renewable energy resources in full amount as well as to achieve its legalization. The Renewable Energy Law was enacted noticeably to introduce a “system of guaranteeing the purchase of electricity generated by using renewable energy resources in full amount”⁴⁸ and establish the “civil and administrative liabilities of power grid enterprises” in violation of their statutory duty.⁴⁹ Because the legislation did not clarify the meaning of “in full amount,” however, the provision is, to a large extent, only a formality. During the revision in 2009, some NPC deputies and relevant departments proposed to increase the regulations on “determining and publicizing the minimum quota of renewable energy generation capacity of the grid enterprises,” but it was not adopted in the amendment. With the highlighted problems in renewable energy power generation and consumption, China’s energy authorities promulgated the Rules regarding the Mandatory Purchase for Renewable Power Generation in March of 2016, in which “guaranteeing the purchase of electricity generated by using renewable energy resources in full amount” was first defined, namely:

the power grid enterprises (including power dispatching agencies) should purchase

⁴⁸ Renewable Energy Law art. 14.

⁴⁹ *Id.* art. 29. It reads: “The Grids shall be liable for any violation of this obligation in terms of both administrative and civil sanctions.”

electricity generated from renewable energy projects in full amount within the planning scope according to the feed-in tariff and the guaranteed purchase hours determined by the state, combined with market competition mechanisms, through the implementation of a priority power generation system and under the premise of ensuring power safety.⁵⁰

According to the provisions of the Law on Legislation of China, the lower law is entitled to create a new system under the precondition that the upper law does not have these corresponding provisions. Otherwise, the lower law can only enact provisions on enforcement based on the upper law.⁵¹ But the Regulation regarding the Mandatory Purchase for Renewable Power Generation is only a departmental rule. Also, the system of “guaranteeing the purchase of electricity generated by using renewable energy resources in full amount” is an established system of the Renewable Energy Law. The restrictive interpretation of the “system of guaranteeing the purchase of electricity generated by using renewable energy resources in full amount” in the Renewable Energy Law is suspected of violating the provisions of law. The Standing Committee of the National People’s Congress of China should revise the existing Renewable Energy Law; revoke the authorization of the lower law; and clarify the meaning of the ambiguous term “in full amount” during purchase by the power grid enterprises.

V. Conclusion

China is one of the biggest energy producing, energy consuming, and CO₂ emitting countries in the world. Although China began using renewable energy in the early 1980s, there was no full legislation in this field. It is not until 2009 that China enacted the Renewable Energy Law and its first amendment. It has played an influential role in promoting the development of renewable energy, leading China into one of the biggest countries with regard to the cumulative installed capacity of both wind and solar power.

The development and exploration of renewable energy has become a worldwide

⁵⁰ Regulation regarding the Mandatory Purchase for Renewable Power Generation, art. 3.

⁵¹ Law on Legislation of China, art. 80. It lays down that the subject-matter which is governed by the rules enacted by the Ministries of the State Council shall be those executing the laws adopted by the National People’s Congress and its Standing Committee, and those which have been governed by the regulations, decisions orders enacted by the State Council.

trend in order to meet the demands of energy structure transition and tackling climate change. Due to its instability and other technical and economic disadvantages compared to traditional fossil energy, however, the electricity generated from renewable energy cannot be connected to the Grids in China, resulting in the large scale of abandonment of wind energy and PV and hence frustrating investors. The abandonment of wind energy and PV has been universally recognized as the Achilles' heel restricting China's renewable energy development.

The fundamental reasons behind the abandonment of wind power and PV are extremely complex. However, noticeable are a lack of hard and effective legal regimes and offsetting by executive rules inferior to the Renewable Energy Law. China has announced its intention to reduce the rate of the abandonment of wind power and PV from the present 20 percent to 5 percent by 2020. Many representatives from the NPC and experts suggest to amend the Renewable Energy Law in order to reach this ambitious target.

The rights and interests of each and every stakeholder in the industry of renewable energy shall be equally safeguarded and protected. Especially, a mandatory regime for compulsory investment in the transmission and distribution networks by the grids must be established. Finally, the regime of purchasing electricity generated from renewable energy in full amount by the grids shall be restored to its original intent embodied in the 1996 Renewable Energy Law, with the reasonable consideration of conditions that benefit the grids.

