

Energy Regulation and Legislation in China

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Summary

Energy regulation plays an important role in China's economic development. Focusing on the electricity industry, four shortcomings of the country's current energy regulation become apparent: first, overemphasis on energy supply and neglect of other aspects of the industry's impacts; second, an unclear system of regulation for the energy sector; third, over-regulation of the energy market; and fourth, insufficient environmental regulation. These shortcomings could be remedied by improving the understanding of the impacts of the energy sector, reforming the administrative regulation system for the energy sector, deregulating the energy market, and strengthening related environmental regulations.

I. China's Energy Regulatory System and Framework

A. History of China's Energy Regulation and Legislation

1. Energy Regulation and Legislation During the Planned Economy Period (1950s-1980s)

The energy industry is essential to the security and independence of a country. After the establishment of the People's Republic of China, energy regulations were subject to the country's planned economy model. At this stage, the understanding was that energy equaled fuel. The Ministry of Fuel Industry (MFI) was set up to regulate the industries of coal, oil, and electricity.¹ The MFI was a product of the planned economy. It set up monthly energy production plans for each energy enterprise. It also controlled and allocated the necessary raw materials and equipment for each energy enterprise, which had to finish the production tasks assigned by the MFI. Strictly speaking, there was barely an energy market and no energy market regulation during this period. The governmental plans replaced the market. Energy enterprises were not market players, and their relationship with the government was like that of children and parents. The implementation of governmental energy plans by energy enterprises was an expansion of government order to the energy sector. Due to the lack of separation between the market and the government, there was neither energy regulation nor a need for regulation. From this perspective, energy regulations at this time were not really laws, but energy production plans and administrative orders.

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1. According to the 1950 Organic Law of the Fuel Industry, the Ministry of Fuel is responsible for: (1) deciding development plans for the fuel industry and approving the structure of fuel industry and operational plans of fuel enterprises; (2) organizing enterprises' construction and production, including finance, materials, and technology; (3) setting up technical standards and improving the enterprises' capacity; (4) monitoring the operation of private fuel companies; and (5) training technical leaders and instructing schools, research entities, and other social organizations with a focus on fuel issues.

2. Energy Regulation During the Economic Transition Period (1980s-1990s)

In 1978, China launched its economic system reform, transitioning from a planned economy to a market economy. As a result, the economy as a whole developed rapidly and the energy shortage problem became apparent. However, the energy enterprises, their investments, and their operational costs were still completely under the government's control and support. Due to insufficient government investment in the energy industry, the industry developed only slowly.

During the economic transition, legislation focused on changing the system by opening the energy market and cultivating diverse players in the market. For example, in 1985, in order to solve the problem of insufficient investment in the electricity sector, China used legislation to diversify the market. The 1985 Temperate Regulation on Encouraging Investment to Electricity Industry and Using Multiple Electricity Pricing Models² established the principle that anyone could invest in power plants, but the government controlled the power grid. This arrangement was later reinforced by the 1996 Electricity Law.³

Although legislation during this period was mostly statements of general principles and the language was ambiguous, it was definitely a step forward in establishing the legal foundation for opening the energy market, and China's energy industrial model started to transform from "government controlled" to the "market plus government regulation" model. The government started to recognize the role of legislation in energy regulation and use laws instead of administrative orders to regulate the energy market, which itself had been separated from the government. This deepened the reform in the energy field. Nevertheless, due to the legislative environment and economic situation, the legislation during this period still reflected significant influences from the planned economy.⁴

3. The New Era for Legislation on Energy Regulation (2000 to Present)

China's energy regulation in the 21st century is conducted within two contexts. Domestically, the market economy has been established, the market plays a dominant role in resources allocation, and the country's economy has been developing rapidly for years. However, the down side of this rapid development model—the high-pollution and high-energy consumption—has been realized. Internationally, the energy crisis is a major challenge for every country. Recently, pollution and climate change have become an unavoidable problem and the center of political attention.

Under both domestic and international pressures, China's energy regulatory legislation started to emphasize energy conservation and emission reduction. "Sustainable development" became a key phrase. In 2005, the Renewable Energy Law⁵ was enacted in order to adjust China's coal-centered energy structure and promote the utilization of renewable energy to realize sustainable development from the supply side. In 2007, China amended the Energy Conservation Law, again focusing on the utilization of renewable energy and promotion of green consumption to realize sustainable development from the demand side. Nevertheless, because the country's energy regulatory system is still under reform and market awareness is yet to be improved, the implementation of these two laws is somehow weakened.⁶

B. China's Energy Regulation Status Quo

I. Current Energy Regulatory Legislation

China has adopted the civil law system, and it focuses on systematic legislation. According to Chinese scholars, the legislative system regarding energy contains six sub-systems, in addition to the basic energy law. These sub-systems focus on coal, oil and natural gas, electricity, nuclear power, renewable energy, and energy conservation.⁷ China is still in need of a basic energy law,⁸ an oil law, a natural

2. Issued jointly by the National Economic Commission, National Planning Commission, Ministry of Water and Electricity, Bureau of Pricing (1987), <http://www.cqpn.gov.cn/gb/laws/xxfg/wj20011.htm> (last visited May 22, 2012).

3. Electricity Law (1996), <http://www.cqdpc.gov.cn/txt/062115.htm> (last visited May 22, 2012), unofficial English translation at <http://www.lawinfochina.com/display.aspx?id=117&lib=law&SearchKeyword=&SearchCKeyword=%B5%E7%C1%A6%B7%A8> (last visited May 22, 2012). Article 3 of the Electricity Law specifies:

The electric power industry shall fit the needs of (the) national economy and social development and develop in advance appropriately. The State encourages and guides legal investment in the development of power sources and the establishment of power production enterprises by domestic and overseas economic organizations or individuals. Investment in the power industry shall implement the principle of "whoever invests benefits."

4. RONGSI YE & ZHONGHU WU, *STUDIES ON CHINA'S ENERGY LEGAL FRAMEWORK 13* (China Electricity Publ.: Beijing 2006).

5. The Renewable Energy Law was first issued in 2005 and later amended in 2009, both by the National People's Congress. Chinese official versions at <http://www.chinalaw.gov.cn/article/xwzx/fzxw/200503/20050300027138.shtml> (2005) and <http://www.wangjiang.gov.cn/wjsf/include/content.php?id=35854> (2009), unofficial English translations at <http://www.lawinfochina.com/display.aspx?id=3942&lib=law&SearchKeyword=coal%20law&SearchCKeyword=%BF%C9%D4%D9%C9%FA%C4%DC%D4%B4%B7%A8> (2005) and <http://www.lawinfochina.com/display.aspx?id=8828&lib=law&SearchKeyword=coal%20law&SearchCKeyword=%BF%C9%D4%D9%C9%FA%C4%DC%D4%B4%B7%A8> (2009) (last visited May 22, 2012).

6. Wang Mingyan, *Issues Related to the Implementation of China's Energy Law: Analysis of the Energy Conservation Law and the Renewable Energy Law as Examples*, 8 VT. J. ENVTL. L. 226-48 (2006).

7. YE & WU, *supra* note 4, at 13.

8. Fortunately, the State Council launched legislation for the energy basic law in 2006. The draft was written by the Office of State Energy Leaders, the

gas law, and a nuclear power law. Currently, the four major energy legislative sub-systems are the following.⁹

*The 1995 Electricity Law*¹⁰ was enacted in December 1995. This is China's first energy law, and thus is a milestone for the country's energy legislation. However, because it was enacted during China's economic transition period, when the electricity sector was still under direct government control, its many provisions are now out of date, and it needs to be amended soon.

*The 1996 Coal Law*¹¹ was first issued in August 1996 and later amended in April 2011. It regulates the exploration, utilization, and production of coal, as well as the operation and business of the coal industry. Thus, it plays an important role in promoting and ensuring the development of the coal industry. However, the 2011 Coal Law still has some significant shortcomings, mostly concerning the unorganized regulatory system and conflicted enforcement power of multiple authorities. For example, the operation of coal mining requires nine permits and one license,¹² which are issued by six different government agencies, including the Ministry of Land and Resources, the Administration of Work Safety, the Administration of Industry and Commerce, the State-Owned Assets Supervision and Administration Commission (SASAC), the Ministry of Environmental Protection, and the National Development and Reform Commission (NDRC). These agencies sometimes have different requirements and even conflicting interests. As a result, the effectiveness of regulation is undermined by overlapping authority or lack of a single regulator with ultimate decisionmaking power.

*The 1997 Energy Conservation Law*¹³ was first issued in November 1997 and later amended in October 2007. It is a comprehensive energy law aimed at promoting energy

conservation in all sectors of society. It plays an important role in improving the efficiency and economic benefits of energy usage. The amendment aims at improving the lack of enforcement, and it clarifies the related government authority. Article 10 states:

The energy conservation administrative department under the local people's government at or above the county level shall take charge of energy conservation supervision and administration within its own administrative area. The departments concerned under the local people's government at or above the county level shall be responsible for energy conservation supervision and administration within the scope of their respective functions, and accept the guidance of the energy conservation administrative department at the same level.

Furthermore, the amended law emphasizes the market mechanisms and contains a chapter on Incentive Mechanisms, which clarifies the country's policies on energy conservation through finance, taxation, pricing, credit control, and government procurement. Finally, the 2007 Energy Conservation Law specifies the legal liabilities of failure to comply, which makes it more enforceable.

*The 2005 Renewable Energy Promotion Law*¹⁴ was first issued in February 2005 and later amended in 2009. It is the first renewable energy legislation in China, which focuses on the development and utilization of renewable energy to improve the country's energy structure, ensure stable energy supply, and prevent pollution and ecological damage due to the rapid increase in fossil energy usage. It has five core management mechanisms: total amount control; mandatory grid connection; categorized electricity pricing; cost allocation; and special funds. The total amount control provision specifies the government's development targets in a certain time period, which sends the market a clear signal and promotes the exploration and utilization of renewable energy. The mandatory grid connection provision requires all power grid enterprises to buy up all the renewable energy available to them. It reduces the transaction costs for renewable energy and eliminates its market entrance barriers. The categorized electricity pricing allows different types of renewable energy to set up its own prices based on its average social costs. The cost allocation requires each region to allocate the extra cost of generating renewable energy in a fair manner, so that the energy producers do not have to absorb the whole additional costs. The special funds are set up to address the problem of extra costs of renewable energy production, and they provide subsidies and other forms of financial support to some renewable energy projects whose costs cannot be fully allocated to all market players.¹⁵

NDRC, the State Council, and the Ministry of Finance, and was published in December 2007 to solicit comments from the society. The draft has 14 chapters totaling 140 articles. The chapters are: General Principles; Energy Comprehensive Management; Energy Strategy and Planning; Energy Exploration and Transfer; Energy Supply and Service; Energy Conservation; Energy Reservation; Energy Emergency Supply; Energy in Suburban Areas; Energy Price and Taxes; Energy Technology; Energy International Cooperation; Monitoring and Investigation; and Legal Responsibilities. Please visit the State Council website for the complete draft at http://www.gov.cn/gzdt/2007-12/04/content_824569.htm (last visited May 22, 2012).

9. We only discuss the laws enacted by the People's Congress and its committee, because there are numerous policies issued by the State Council and other departments, and it is infeasible to try to list all of them.
10. Electricity Law, *supra* note 3.
11. The Coal Law was first issued in 1996 and later amended in 2011, both by the National People's Congress. Chinese official versions at http://www.lawlib.com/law/law_view.asp?id=346436 (1996) and <http://www.chinalaw.gov.cn/article/xwzx/fzxw/201104/20110400338906.shtml> (2011); unofficial English translations at <http://www.lawinfochina.com/display.aspx?id=1034&lib=law&SearchKeyword=coal%20law&SearchCKeyword=%C3%BA%CC%BF%B7%A8> (1996) and <http://www.lawinfochina.com/display.aspx?id=8799&lib=law&SearchKeyword=coal%20law&SearchCKeyword=%C3%BA%CC%BF%B7%A8> (2011) (last visited May 22, 2012).
12. The nine permits required are mining, coal production, safety production, safety certificate for the mine manager, certificate for the deputy coal manager, safety certificates for mining operational personals, certification for the coal manager, technical certificate for special coal mine workers, and coal mining. The license required is the Business License.
13. The Energy Conservation Law was first issued in 1997 and later amended in 2007, both by the National People's Congress. Chinese official version at http://www.gov.cn/flfg/2007-10/28/content_788493.htm.

14. Renewable Energy Law, *supra* note 5.

15. The amendment focuses on renewable energy planning, mandatory renewable energy purchase mechanisms, and renewable energy funds. First, the responsible department under the State Council will develop a national renewable energy development and utilization plan based on mid- and long-term energy goals and current technology development levels, which needs to be approved by the State Council. Second, the amendment specifies the

2. The Current Energy Regulatory System

China's energy regulatory system has been undergoing many changes. Before 1988, the system was segmented: the Ministry of Oil, the Ministry of Coal, and the Ministry of Water Conservancy and Electric Power were in charge of the respective energy sectors. In 1988, the Ministry of Energy was established, and these three departments were eliminated. The Ministry of Energy was responsible for unified regulation of the energy industry. However, because there were too many department interests involved, this Ministry was dissolved in 1993, and the Ministry of Coal and the Ministry of Electricity were reorganized. Before long, these two ministries were also dissolved, leaving a gap in the energy regulatory system. As the energy market reform deepened, the energy regulation problems became more prominent, and in 2003, the State Electricity Regulatory Commission (SERC) was set up to regulate the electricity market. In order to coordinate the development of different energy sectors, the Bureau of Energy was also established under the NDRC in the same year. However, until now, the problem of inconsistent management systems and overlapping authorities in the energy industry is still unsolved. During the Super-Ministry Reform in 2008, the country established the National Energy Commission, which aims to coordinate all administrative departments with different aspects of energy industry regulation.¹⁶ There are roughly seven departments in charge of some aspects of energy industry regulation. These departments are:

The Bureau of Energy under the NDRC¹⁷ is responsible for: researching the domestic and international energy situation and proposing energy development strategies and important policies; creating energy development plans and system reform recommendations; regulating oil, natural gas, coal, and electricity; managing the country's oil reserves; proposing energy conservation and new energy development policies; regulating energy prices; and approving total amount control plans and main energy construction projects.

*The Ministry of Land and Resources*¹⁸ is responsible for setting up policies and technological requirements related to mining sources; regulating the mining rights for oil and natural gas; approving mining licenses; regulating the geological survey industry; managing the collection and utilization of compensation fees for mineral resources; and managing oil and natural gas storage information and geological information.

*The Ministry of Housing and Urban-Rural Development*¹⁹ is responsible for managing the feasibility studies, economic index, construction standards, construction period, construction land quota, and construction price of energy projects, including oil exploration and design, construction, and construction monitoring.

The State Administration of Work Safety's²⁰ main responsibilities are monitoring the production safety of oil and natural gas exploration enterprises, including production safety, safety equipment and facilities, and workplace sanitation; organizing the safety facility design, investigation, and final approval; and participating in investigation of large accidents.

*The Ministry of Commerce*²¹ is in charge of the importation and exportation quotas of oil and natural gas products, designing policies of market operation and circulation rules for oil products; monitoring and analyzing the energy market; and approving big foreign investment projects and the establishment of foreign firms in China.

The Ministry of Environmental Protection (MEP)²² issues environmental policies and conducts environmental implementation and supervision. There are many environmental issues related to energy exploration and utilization, such as environmental impacts assessment of energy construction projects and pollution during energy exploration and production. All of these issues are under the MEP's jurisdiction.

*The State Bureau of Tax*²³ is responsible for setting up and collecting resource taxes for oil and natural gas, mine usage fees, and other related taxes.

Currently, China's unorganized energy regulatory system and compromising legislation, which results in the lack of clear law enforcement authority, further weakens the country's energy regulation. The descriptions above demonstrate a huge overlap in the departments' authority involved with energy regulation, and the regulatory system is inconsistent.

To some extent, the ambiguous expressions in legislation exacerbate this problem. Take the Electricity Law, Article 6, for example. The Article says:

The administrative department of electric power under the State Council shall be responsible for the supervision and control of the electric power industry throughout the country. The departments concerned under the State Council shall, within the scope of their respective authorities, be responsible for the supervision and control of electric power industry. The comprehensive administrative departments of economy under the local people's

mandatory percentage of renewable energy of all energy production, gives renewable energy priority to connect to the grid, and ensures all renewable energy generated will be purchased. Third, the country should include renewable energy funding in its annual fiscal planning by establishing special funds and collecting the renewable energy fees.

16. Xin Qiu & Honglin Li, *China's Environmental Super Ministry Reform: Background, Challenges, and the Future*, 39 ELR 10152-63 (Feb. 2009).
 17. Official Chinese website: <http://nyj.ndrc.gov.cn/> (last visited May 22, 2012).
 18. Official English website: <http://www.mlr.gov.cn/mlrenglish/> (last visited May 22, 2012).

19. Official Chinese website: http://www.gjjs.gov.cn/index.php?langtype=cn&pageid=cn_1 (last visited May 22, 2012).

20. Official Chinese website: <http://www.chinasafety.gov.cn/newpage/> (last visited May 22, 2012).

21. Official English website: <http://english.mofcom.gov.cn/> (last visited May 22, 2012).

22. Official English website: <http://english.mep.gov.cn/> (last visited May 22, 2012).

23. Official English website: <http://www.chinatax.gov.cn/n6669073/index.html> (last visited May 22, 2012).

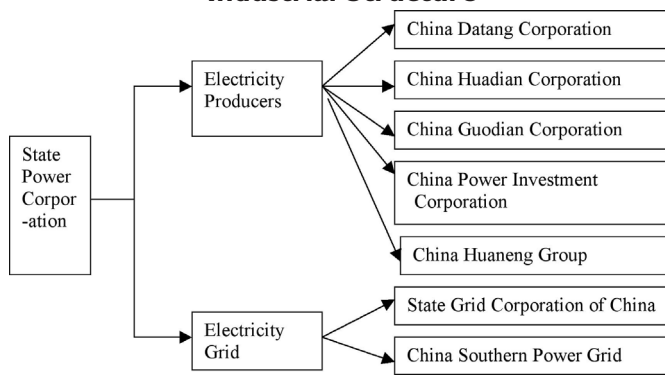
governments at and above the county level, acting as the administrative departments of electric power in their own administrative divisions, shall be responsible for the supervision and control of the electric power industry. The departments concerned under the local people's governments at and above the county level shall, within the scope of their respective authorities, be responsible for the supervision and control of electric power industry.

However, the Electricity Law fails to specify who the "the administrative department of electric power" is or who the "departments concerned under the State Council" are. In fact, the NDRC and the SERC have both been "responsible for the supervision and control of the electric power industry." This regulatory inconsistency and uncertainty fundamentally weakens energy regulation in China.²⁴

3. The Current Structure of China's Energy Industry

The energy industry in China is undergoing a process of separating enterprise from the government, the goal of which is to establish a healthy energy sector. Take the electricity industry, for example. More people have understood the nature of the electricity industry as a natural monopoly²⁵ and its importance in the deepening of the nation's economic market reform. In 2002, based on the principle of separation of electricity production and transmission, China reorganized the State Power Corporation, set up independent electricity producers, and ended the government's vertical-control framework in which the electricity production, transmission, distribution, and selling were tied together. Figure 1 shows the basic structure of China's electricity industry.

Figure 1: China's Current Energy Industrial Structure



24. In fact, China's electricity regulatory system has been through four reforms. In 1988, the Ministry of Water Resources and Electric Power was dismissed and the Ministry of Energy was founded; in 1993, the Ministry of Energy was dismantled and the Ministry of Electric Power was reorganized; in 1998, the Ministry of Electric Power was eliminated and the electricity regulatory authority was given to the State Economic and Trade Commission and the NDRC; and in 2002, some of the electricity regulatory authority was given to the SERC. According to the Electricity Law, the "department in charge of electricity regulation" should be determined by energy regulatory system reform.

25. CABBELL R. MCCONNELL & STANLEY L. BRUE, *ECONOMICS* 639 (2002).

All operations under the State Power Corporation were divided into two types of businesses: electricity production; and electricity grid. Five independent electricity-producing enterprises were set up, and they each had more than 30 million kilowatts (kW) of installed capacity. They are: China Datang Corporation; China Huadian Corporation; China Guodian Corporation; China Power Investment Corporation; and China Huaneng Group. These five companies occupied six regional electricity markets, and provided the solid foundation for a competitive electricity market in each of those regions.

The power grid connection is still an oligopoly. Two power grid companies were set up: the State Grid Corporation (SGC); and China Southern Power Grid (CSPG). The SGC was a state-owned corporation, which set up five regional power grid companies. The CSPG was rebuilt by the Guangdong Provincial Government, Hainan Provincial Government, and the SGC on the base of the existing power grid connection.

Generally speaking, China's electricity industry has mostly separated electricity production from transmission, and has made significant progress in investment system reform, opening up the electricity production process, and separating electricity enterprises from the government. However, its structural reform is still incomplete. From the market entrance perspective, civil and foreign investments still have some disadvantages compared to state-owned companies, and a diverse property structure has not yet been established. The power grid companies still own a number of power plants; thus, the separation of electricity production from the grid-connection is incomplete. Some major electricity consumers, such as large steel factories, still have their electricity allocated to them by the government, instead of being able to bid for a better price in the market. Introducing competition into the generation sector is still experimental. The power grid companies are the only buyers of electricity from the producers, and the only sellers of electricity to the consumers; thus, they have a monopoly. In sum, China's electricity industry is still far from being a competitive market with diverse market players.

II. Challenges of China's Current Energy Regulations

Law has played an increasingly important role in energy regulation in China, as demonstrated by the announcements of the Coal Law, Electricity Law, Energy Conservation Law, and Renewable Energy Promotion Law. Given the tradition of policy overriding legislation on energy regulation in the country, the emergence of energy laws is a big step forward. However, compared to the more advanced energy laws and regulations in developed countries, the country's system still has four areas that can be improved significantly.

A. *Insufficient Understanding of Energy Legislation: A Mistaken “Common Sense”*

The understanding of legislation influences the design of the laws. The majority of China's energy legislation was conducted at the end of the last century during its transition from the planned economy to the market economy, with the exception of the Renewable Energy Promotion Law. During that period, the priority was to solve the shortage of energy caused by rapid economic development, since energy supply was the bottleneck of development. Energy security was mistakenly considered equal to energy supply security. As a result, legislators believed that energy legislation should focus on energy production exclusively to ensure the sufficient, reliable, and continuous supply of energy through economic regulations. In other words, energy legislation served the higher goal of economic development.

The mistaken understanding that energy security equals energy supply security led to the concept that energy legislation should only focus on energy production. As a result, the notion that energy laws were economic regulatory laws was rarely questioned in China. Nevertheless, this understanding of energy security has been under tremendous challenge in America, and it is now believed that energy legislation must consider factors other than economic regulations. Richard J. Pierce Jr. and Ernest Gellhorn expressed that social regulations are being integrated with economic regulations; as social concerns increase regarding the environment, energy institutions have been trying to integrate environmental costs into their policymaking.²⁶ Sidney A. Shapiro and Joseph P. Tomain also foresee the end of the traditional energy regulations, which only emphasize economic regulation and ignore the environmental impacts.²⁷ In summary, energy legislation goes beyond the laws of economic regulation, and into the realm of environmental protection. Therefore, to achieve the social regulatory goals of energy laws, environmental factors should be considered in energy regulatory legislation.²⁸

B. *Inconsistent Energy Regulatory Authority*

In spite of the four existing energy-specific laws listed above, China's current energy regulatory system is still incomplete and inconsistent. Thus, people have high expectations for the upcoming Energy Law.²⁹ However, the draft of the

Energy Law submitted for comments is still vague on the regulatory system of energy regulation.³⁰ In addition, the latest administrative reform under the State Council in March 2008 did not establish the Ministry of Energy or the Energy Regulation Commission, which would have the unified authority to regulate energy-related issues.³¹ The pressing issues of the country's energy regulation system include the lack of separation of the political authority and the regulatory authority, overlapping regulatory authority of electricity regulation, and lack of regulatory authority in natural gas regulation. These shortcomings have largely restricted efficient regulation and should be addressed by future energy regulatory legislation.

I. *Lack of Separation of the Political Authority and the Regulatory Authority*

Under China's planned economy system, the energy industry was controlled by the state, and this situation has not yet changed entirely. To regulate the nationalized energy industry, the energy administrative management department usually has three main responsibilities. First, as the owner of state property, it is responsible for bringing in the value added to the state property. Second, as a macro management department, it is responsible for designing the macro energy policy. And third, as a micro management department, it is responsible for market regulation. By comparison, developed country governments, including the United States and England,³² usually emphasize the separation of the authority of macro policymaking and micro market regulation. For example, the U.S. federal government has a Department of Energy (DOE), which is in charge of policymaking, and the Federal Energy Regulatory Commission (FERC), which implements market regulation. Human resource and fiscal policies are set up to prevent political interference and to ensure the independence of FERC. Realizing that investors would be more confident in the market if there was an independent regulatory institute, China also established its SERC in 2002.

energy sector, such as China's Electricity Law, Coal Law, and Renewable Energy Law. The basic energy law is the basic law of all energy sectors and the foundation of all special laws, and it focuses on principles and universally applicable rules.

30. The draft for comment solicitation of China Energy Law, Article 13, says:

The department in charge of energy regulation under the State Council should organize the implementation of the national energy strategy, draft and implement energy planning and policy-making, regulate each energy industry, and coordinate the development and reform of the energy sector. The State Council decides the responsibilities and authority of the department in charge of energy regulation under it. The local departments in charge of energy regulation above the county level are responsible for the energy utilization and conservation tasks. Local governments decide the establishment and responsibilities of the local departments in charge of energy regulation.

This provision is very vague, because the department in charge of energy regulations is undefined.

31. Jianmin Hua (Secretary of the State Council), *Instructions on Organizational Reform of the State Council*, CHINESE COMMUNIST PARTY NEWS, <http://cpc.people.com.cn/GB/64093/64094/6986510.html> (last visited May 22, 2012).

32. This practice is in England only, not the entire United Kingdom.

26. RICHARD J. PIERCE JR. & ERNEST GELLHORN, *REGULATED INDUSTRIES IN A NUTSHELL* (1994).

27. Sidney A. Shapiro & Joseph P. Tomain, *Rethinking Reform of Electricity Markets*, 40 WAKE FOREST L. REV. 497 (2005).

28. In China, economic regulations usually refer to government intervention through restrictions on price, production, and market entrance, and exist in the areas of natural monopoly and with asymmetric information to prevent inefficient allocation and ensure just utilization of resources. Social regulations usually refer to government regulations on product and service quality, related production activities, standard-setting, and prohibition and limitation of certain behavior to ensure the safety of workers and consumers, public health, environmental protection, and accident prevention.

29. In a civil law system, energy laws can be divided into special energy laws and basic energy laws. The special energy laws usually regulate one specific

However, although the American and the Chinese institutes are both called “regulatory commissions,” the latter lacks the necessary independence in decisionmaking and implementation as a result of the lack of separation of the political authority and the regulatory authority; many policymaking entities are also responsible for market regulation. One example is that the price-setting authority is still under the control of the NDRC, the main policy designer in China.

The biggest problem arising from the lack of separation of the political authority from the regulatory authority is that market regulation is often interrupted for political reasons, which usually results in the weakening of the energy regulation’s market targets and even decreases market efficiency for political compromises. For instance, the NDRC is China’s macroeconomic policy authority, but it also controls the market entrance and price regulation of the energy industry. Its energy price-regulation authority extends to price control and price intervention. In order to control inflation, make Chinese exported goods more competitive pricewise, and ensure domestic social stability, energy prices are artificially depressed and distorted. As a result, energy prices are lower than their value, making it impossible to solve the problems of waste and overconsumption of energy.

2. Overlapping Electricity Regulatory Authorities

The lack of separation between the political authority and regulatory authority also caused the problem of overlapping regulatory authorities in one sector. The separation of the two authorities aims at specialization of the duty to make policy and the duty to implement, and minimizing the overlapping of authorities. In the electricity regulation field, due to the incomplete separation of these two authorities, the SERC lacks the complete authority of regulation, and many industrial regulatory authorities are still controlled by other macro policymaking departments, such as the NDRC, the Ministry of Finance (MOF), some provincial Economic and Trade Commissions, and the SASAC. The NDRC, as a macroeconomic policy designer, is in charge of energy policymaking, including long-term strategic planning for the electricity industry, and demand estimation. Meanwhile, it has many micro regulatory responsibilities, including the two most important jurisdictions in market regulation: market entrance; and price-setting. Moreover, the SASAC is in charge of the senior personnel changes in state-owned electricity enterprises, and the MOF establishes the fiscal requirements, cost standards, and other issues related to electricity enterprises. As a result, the SERC only has segmented authority in market regulation.

In sum, one big challenge facing China’s electricity regulation is that the institution in charge, the SERC, lacks the indispensable authority to regulate. In other words, China’s current separation of the political authority and

the regulatory authority is incomplete, because many policymaking departments still enjoy the power to conduct several market regulatory practices, which is nowhere close to “independent regulation.” The SERC only has nominal authority as the regulatory institution of the electricity industry, because the power to regulate market entrance and price-setting is absent. Thus, the SERC is often seen as a judge who has no authority.³³

3. Lack of Regulatory Authority in the Oil and Natural Gas Industries

The regulatory authorities of many countries are also responsible for mixed regulation, due to the close connection between the energy, oil, and natural gas industries. For example, in America, FERC regulates the electricity industry, natural gas industry, and oil pipeline transmission simultaneously.³⁴ This is due to the similarities between the different industries within the energy sector, such as the three industries listed above, which are all energy production and distribution industries with natural monopolies on the market.³⁵ These sectors usually have allied regulatory requirements and procedures, including market entrance and price regulation. Having the same regulator for these industries can avoid redundant efforts, reduce regulatory costs, improve regulation efficiency, and avoid the regulatory gap. However, energy regulation in China is divided by industry. The electricity regulator is only responsible for the electricity industry, while no regulator has been established to regulate the oil industry or the natural gas industry, due to the complex industrial interests involved. As a result, the state has insufficient regulation upon these industries.

C. Over-Regulation

Energy products have been under the state’s stringent regulations because they are a foundation of national security and a necessity of people’s daily life. However, the market reform for the energy industry has been dragging in China, although the reforms in other sectors have developed rapidly. The energy regulatory legislation is still undergoing the transition period from a planned economy to a market economy. Therefore, many regulations are designed from a planned economy perspective, resulting in over-regulation of the energy industry under free market standards.

I. Over-Regulation of Energy Market Entrance

Market entrance regulation requires prior investigation of certain activities within an enterprise’s related market practices to evaluate whether the enterprise can meet the energy

33. Jiayong Zhong, *SERC Has Been Long for Sufficient Regulatory Authority*, 7 *BUS. WKLY.* 56-58 (2004).

34. JAMES H. MCGREW, *FERC: FEDERAL ENERGY REGULATORY COMMISSION* (Chicago: American Bar Ass’n 2002).

35. MCCONNELL & BRUE, *supra* note 25, at 639.

service standards, and also to protect public interest. This is an important part of the economic regulatory system. On the one hand, the market demands freedom and autonomy and builds upon the realization of private rights, individual interests, and the desires of economic persons. On the other hand, “market entrance” is an action of permission and regulation of the market by the state, and it is based on public authority to intervene in the market.³⁶ Therefore, regulation of energy market entrance is a restriction by the public authority upon private rights. More precisely, market entrance regulation is a restriction of private business freedom, which often appears as administrative licensing, and is realized by government issuing permits to energy companies.

From the perspective of Chinese administrative law, administrative licensing can be divided into two types: regular licensing; and special licensing. Regular licensing aims at preventing risks, usually has no limit on the quantity of licenses, and can be granted as long as the basic requirements are met. Special licensing is designed to regulate the prices and quality of monopolized products or services and avoid waste of resources and duplicate construction, and usually has a maximum number of licenses to be granted. It is important to differentiate between regular and special licensing in order to control the stringency of market entrance for different market processes in the energy industry.³⁷

For the energy industry, the trend is to apply the regular licensing approach to a sector where a natural monopoly does not exist, and special licensing to a sector where a natural monopoly exists. For the sectors where there is no natural monopoly, such as electricity generation and electricity sales, the common practice is to deregulate and introduce competition into these sectors. The market players should be able to get permission, as long as they can meet the technical safety standards and environmental protection requirements. The market entrance regulation should focus on technology, safety, and environmental standards, instead of whether the investment is economically sound, and thus, regular licensing should be applied. On the other hand, for the sectors where there is a natural monopoly, such as electricity transmission and natural gas pipeline transportation, the common practice is to restrict competition for economic consideration. It can be seen as the government’s authority to allocate scarce resources by granting special permission to the licensees, and thus, the government should apply special licensing and have a quantity limit.³⁸ Due to this restriction, these special permits have more stringent regulations on price and quality, and are usually only granted to existing market players.

However, in China, strict administrative regulations are applied to energy market entrance, regardless of whether the sector is a natural monopoly. Take the electricity-generation market, for instance. Electricity generation is not a sector with a natural monopoly, and thus competition should be allowed. In principle, as long as the construction and operation of a power plant can meet the technical and environmental standards, investors should be allowed to enter the market. However, there are multiple restrictions imposed on electricity-generation investors by the government, including generation capacity, location of construction, timing of construction, scale of investment, operation hours, wholesale price, etc. As a result, the market entrance barriers are very high, especially for private capital investments.

2. Over-Regulation of Energy Pricing

The energy market is not a free market, and thus, price regulation is one of the core aspects of energy regulatory legislation. Pricing regulations can prevent a market player from gaining a high profile from its monopoly status. The most common practices in western countries include rate-of-return regulation and price-cap regulation. The rate-of-return regulation ensures fair return by restricting the investor’s capital rate of return; thus, it is also known as fair rate-of-return regulation. This approach was invented in the United States and has been utilized for more than 100 years. It was originally used to solve the problem of high monopoly profits of the railroad industry, and then later applied to the price regulations in the energy sectors, such as electricity and natural gas. It regulates the product price by estimating a fair rate of return for the regulated enterprises’ investment. It allows the enterprise to earn a fair profit from its investment, and disallows profits beyond that. The enterprise can choose the price, productivity, and input, as long as its profit is within the range of a fair rate.

The price-cap regulation refers to an approach of setting a price ceiling on the regulated products or services, and prohibiting the enterprises from charging more. This mechanism was applied to the energy sector gradually after its proven success in the British telecommunications industry. In Britain, it was used in the natural gas industry in 1986 and the electricity industry in 1990. Nowadays, the price-cap regulation is widely used by energy regulators in many countries.³⁹ In sum, the goal is to ensure just and reasonable energy prices, regardless of which regulations apply.

China’s electricity market reform is still in progress, and determining generation prices through bidding is still at the experimental stage. The current price regulation in the country is called the “capital cost-repayment price” model, which is different from both rate of return and price cap. The basic formula of “capital cost-repayment price” is: “electricity price = reasonable costs + reasonable profits

36. Xie Dai, Study on Laws and Regulations on Market Entrance (2006) (unpublished Ph.D. dissertation, Southwest Univ. of Laws and Politics) (on file with authors).

37. Article 12 of the China Administrative Permission Law is an example of special permission. It allows the government to set up special permits for “exploration of limited natural resources, market entrance for allocation of public resources and industries directly related to public interests, and other activities that require special authorization.”

38. McCONNELL & BRUE, *supra* note 25, at 466.

39. Mark Newton Lowry & Lawrence Kaufmann, *Performance-Based Regulation of Utilities*, 23 ENERGY L.J. 399 (2002).

+ taxes.” The price of electricity generation is the sum of the costs of generating electricity, reasonable profits, and appropriate taxes, which ensures that the power plants can have sufficient revenues for the repayment of loan capital and interest within a relatively short term, generally 10 years.⁴⁰ In practice, regulators set prices based on the costs reported by the power plants, which vary between plants. This results in some confusion, due to the fact that each power plant, or units within the same power plant, might have different prices, because the costs of operation are different. In other words, “capital cost-repayment price” regulation results in “one plant, one price” or “one unit, one price.”

There are at least four disadvantages to this practice. First, the “capital cost-repayment price” approach oversimplifies price regulation, because it lacks specific standards and requirements to decide whether the costs are “reasonable.” As a result, price-setting, to some extent, can be subjective. Second, “one plant, one price” or “one unit, one price” can cause inconsistency, and thus, increase the costs of regulation. Third, the high level of control enjoyed by the regulator means market factors are ignored. As a result, prices are usually not “just and reasonable,” because they hardly reflect the true costs of generating and selling electricity. Finally, because the price regulator in China is not the SERC, but the NDRC, a macro policy designer, the price regulation becomes a form of macroeconomic tool to control prices of other goods, to promote international trade, and to maintain social stability. As a result, the energy price is often depressed and distorted.

D. Inadequate Environmental Regulation

Michael Dworkin from Vermont Law School repeatedly emphasizes that “Energy policy is our world’s most important environmental issue. Environmental issues are the energy sector’s most important challenge and constraint.”⁴¹ However, for a long time, China has only focused on energy supply security and ignored environmental regulation during energy exploration and utilization. There are two main aspects that should be improved: regulation of renewable energy on the supply side; and energy consumption management on the demand side.⁴²

40. LIU SHIJIN, FENGFEEI: *THE REFORM OF CHINA’S ELECTRICITY INDUSTRY AND SUSTAINABLE DEVELOPMENT* 235 (Beijing: Economic Management Publ. House 2003).

41. Xin Qiu audited the energy law course by Prof. Michael Dworkin at Vermont Law School in 2008. He emphasizes in his class that “energy policy is our world’s most important environmental issue. Environmental issues are the energy sector’s most important challenge and constraint.”

42. China’s energy environmental regulations generally fall into two categories. First, are general environmental regulations applied to the energy sector, such as the Environmental Protection Law, Air Pollution Prevention and Control Law, and Water Pollution Prevention and Control Law. These laws are applicable to all sectors, including the energy sector. Second, are environmental regulations within the energy laws, such as the Renewable Energy Promotion Law, Energy Conservation Law, and Electricity Law. These special laws focusing on the energy sector also have environmental provisions. The first category will be discussed in other sections of the book, so the authors want to emphasize the second category, with a focus on renew-

I. Insufficient Restriction on Utilization of Renewable Energy

China’s 1996 Electricity Law requires that:

The construction, production, supply and utilization of electric power shall protect the environment according to law, adopt new technologies, minimize discharge of poisonous waste, and prevent pollution and other public hazards. The State encourages and supports electricity generation by using renewable and clean energy resources.⁴³

However, due to the lack of specific implementation rules, the renewable energy sector had not developed much. In 2006, China enacted the Renewable Energy Law, which is the first special law on promoting renewable energy development.

Based on the requirements in the 2006 Renewable Energy Law,⁴⁴ the SERC issued the Regulatory Rules on Grid Enterprises Purchasing All Electricity Generated by Renewable Energy. First, these Rules require the SERC to monitor the renewable energy projects’ electricity generation, operation, grid connection, and network, to ensure renewable energy can access the grid in a safe and timely manner. This is a prerequisite to the mandatory purchase of all electricity generated by renewable energy. The NDRC 2007 Mid- and Long-Term Plans for Renewable Energy specifies that renewable energy should provide 10% of the country’s energy consumption,⁴⁵

From the end of 2005 to the end of 2007, the capacity of renewable energy facilities nationwide increased by 3.6 million kW, or 30.6%, compared to 2005 levels. The capacity of hydroelectricity, wind electricity, and bio-electricity increased 26.3%, 444%, and 429%, respectively. The actual increase of electricity generated was 82.2 billion kilowatt hours (kWh), or 20.6%. The increase of hydroelectricity, wind electricity, and bio-electricity was 18.9%, 268%, and 363%, respectively.⁴⁶ In 2009, China had become the largest investor of renewable energy in the world.⁴⁷ However, because the mandatory purchase model does not specify the quantity of renewable energy each energy producer has to generate or purchase, the country’s renewable energy goal is uncertain. To remedy that, the 2009 Renewable Energy Law Article 14 requires mandatory purchase and also sets up the base for quantity regulation in the future.

able energy utilization on the supply side and energy management on the demand side.

43. Electricity Law, *supra* note 3, Article 5.

44. Renewable Energy Law, *supra* note 5.

45. Bureau of Energy, NDRC, *NDRC’s Notice on Launching Mid- and Long-Term Renewable Energy Development Planning* (2007).

46. State Electricity Regulatory Commission, *Monitoring Report on the Implementation of Purchase and Pricing Policies of Renewable Energy* (2008).

47. Pew Institute, *Who’s Winning the Clean Energy Race?* (2010), available at http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Glob-al_warming/G-20%20Report.pdf.

Article 14 states:

The state applies the system of guaranteeing the purchasing of electricity generated by using renewable energy resources in full amount. The energy department of the State Council shall, together with the State Electricity Regulatory Commission and the public finance department of the State Council, and according to the national plan for the development and utilization of renewable energy resources, determine the target proportion, which shall be realized in the planning period, between the electricity generated by using renewable energy resources and the total electricity generated and work out the specific measures for power grid enterprises to firstly schedule the generation of electricity with renewable energy resources and purchase electricity generated by using renewable energy resources in full amount. The energy department of the State Council and the State Electricity Regulatory Commission shall urge the implementation of such measures in the planning years. Power grid enterprises shall conclude grid connection agreements with enterprises which generate electricity by using renewable energy resources and which have gone through the administrative licensing or archive-filing formalities according to the plan for the development and utilization of renewable energy resources, purchasing in full amount the on-grid electricity of the grid-connected power generation projects which meet the grid connection technical standards in the coverage area of their power grids. Electricity generating enterprises are obliged to cooperate with power grid enterprises in protecting grid security. Power grid enterprises shall strengthen the power grid construction, expand the scope of areas where electricity generated by using renewable energy resources is provided, develop and apply intelligent power grid and energy storage technologies, improve the operation and management of power grids, improve the ability for absorbing electricity generated by using renewable energy resources, and provide services for bringing electricity generated by using renewable energy resources on grid.

Article 14 establishes China's renewable energy mandatory purchase model. Mandatory purchase favors the renewable energy industry in areas of market entry, pricing and grid connection, because renewable energy is less competitive than the traditional energy industries in the current markets. The mandatory purchase model promotes the development of the renewable energy industry and contributes to the country's energy-saving and emission-reduction goals.

2. Deficiency in the Incentive-Based Approaches on Demand-Side Management

Demand-side management (DSM) changes consumers' utilization of energy to protect the environment by increasing energy efficiency, optimizing resources allocation, and minimizing energy service costs to provide energy services.

DSM is currently mainly used in the electricity sector, and it covers areas such as regulatory mechanisms and electricity technologies. On the consumer side, energy regulators change consumers' behavior through price signals to increase energy efficiency. On the energy enterprise side, energy regulators require enterprises to adopt integrated resource planning (IRP) to minimize costs by prior evaluation of the feasibility of the power plan and power grid construction on the investment demand side, and ruling out all alternatives.

DSM was introduced to China in the 1990s, and is still new to the country's energy regulation. The regulations that relate to DSM are the 2001 Regulation on Electricity Conservation and the 2005 Interim Provisions for the Administration of Power Selling Prices (2005 Provision).⁴⁸ One of the core aspects of DSM is that the energy regulator should adopt a diverse price structure to adjust electricity prices at different times to reflect the real costs at different times of utilizing the instructive function of price signal, improve energy efficiency, and achieve the goals of energy conservation and emissions reduction. However, even though the 2005 Provisions specify that the SERC is responsible for conducting DSM to regulate the electricity suppliers, the SERC is incapable of doing so, because the pricing authority is under the control of the NDRC. As a result, although the SERC can, in theory, conduct DSM to regulate the energy supplier, it lacks the necessary authority to implement it through price regulation.

Moreover, DSM factors are also included in IRP. In other words, DSM is part of the broader IRP, and more than 30 countries in the world have, to some extent, utilized IRP to regulate electricity-generation corporations to minimize their investments. In America, more than 30 states have incorporated IRP as a prerequisite to build new power plants or expand existing facilities. Meanwhile, regulators need to conduct cost-benefit analysis when approving new constructions, to evaluate energy conservation, energy efficiency, and other aspects of the DSM. The key to implementing IRP is to enable the electricity enterprises to recover their investment on DSM, which creates incentives to conduct DSM. The Energy Policy Act of 1992 in the United States requires electricity enterprises to include DSM investment projects into a base rate, which allows the enterprise to recover the cost of DSM as they recover their fuel cost. As a result, although DSM might lead to reduction of electricity consumption, which might lead to a reduction of profit for electricity enterprise, this provision allows the enterprises to be compensated from this reduction, and thus avoid the loss of this public utility. In contrast, China's IRP is oversimplified and lacks the supplementary measurements. The Regulation on Electricity Conservation, Chapter 3, only mentions that "electricity planning or IRP should include context of electricity DSM," but provides no specific rules on IRP regulatory

48. See Article 19 of 2001 Regulation on Electricity Conservation and Article 15 of 2005 Interim Provisions for the Administration of Power Selling Prices.

procedure, fiscal compensation, and other important related issues. As a result, it fails to provide incentives for the enterprises to conduct IRP.

III. The Future of China's Energy Regulatory Legislation

A. *Improving the Understanding of Energy Regulation: A New Vision for Energy Security*

Energy supply is not the only pressing energy issue faced by China, and single-dimensional legislation, focusing exclusively on energy supply security, is too narrow now. China should adopt a multidimensional energy security concept, which emphasizes sustainable development and includes the following aspects to instruct and improve the country's energy legislation.

1. Regulation by the Government

Under traditional views, the main purpose of energy legislation is to ensure energy supply security. However, the new energy security concept focuses simultaneously on sufficient energy supply, sustainable development of supply, and reasonable price. The core of energy security is to guarantee an adequate supply of energy at a reasonable price. In other words, it is the state's responsibility, in order to fulfill its duty to its citizens, to ensure that the public has energy to use and that the price of energy supply is affordable. To realize energy supply security, correct market failure, and ensure sufficient energy supply, it is unavoidable to have government intervention in the energy market. Government regulation of the energy market requires a complete energy regulatory system, comprehensive energy administrative organizational legal framework, and clearly defined legal status, regulatory authority, and regulatory procedure of the regulator. These are essential for efficient governmental regulation.

2. Driven by the Market

Recognizing the government's role as the regulator does not deny the role of the market. In contrast, government regulation is based on the establishment of the energy market, and the regulation is supplementary to the market functions. Therefore, the new energy security concept not only emphasizes government intervention, but also recognizes that state monopoly, administrative monopoly, and market monopoly are all barriers to energy security. The current international reform emphasizing the roles of the energy market and private investment reflects the trend of realizing energy security based on a sustainable, sufficient, and stable supply of energy through market tools. The development and adjustment of energy markets should be mostly driven by the market, not the government. Deregulation should be conducted in some economic areas, especially on market entrance and price control, thus minimizing the

role of government intervention, and maximizing the market's role in resources allocation.

3. Importance of Environmental Protection

The overemphasis on energy supply security by the single-dimensional energy security concept ignores the important perspective of ecological safety. In fact, the life cycle of energy exploration and utilization imposes significant pressure on the environment, and thus can cause provincial, regional, and even national environmental problems. As the crisis of energy shortage and threats of climate change become more realistic, the notions of environmental protection and sustainable development are widely accepted, and it has become a common belief that energy security includes energy ecological security. From this perspective, energy regulatory legislation should utilize energy conservation and emissions-reduction designs, demonstrate the trend of being more "ecological," and be "market-friendly" and "environmental-friendly" at the same time.

B. *Reforming the Energy Regulatory System*

From the perspective of government regulation, one of China's current energy legislation priorities is to reform the energy regulatory system. Energy regulation is vital to energy management, and is a fundamental solution to energy problems. Governments need not organize production by itself; as long as it can establish a reasonable system, productivity will develop rapidly.⁴⁹ China should enact the Energy Law or a special Energy Administrative Organic Law to correct the problems within energy regulation, such as the lack of separation between the political authority and the regulatory authority, overlapping of regulatory authority, and lack of regulatory authority. China's future energy regulations should be built on the concept of "the super ministry" and the separation of political and regulatory authority, a unified Ministry of Energy, and a comprehensive Energy Regulatory Commission should be established.

1. Creating a "Super Ministry"

The concept of a "Super Ministry" refers to an administrative management system that combines several departments with similar functions, in order to condense closely related responsibilities into one department, with coordinating actions.⁵⁰ However, China's current lack of separation of political and regulatory authority and overlapping regulation is far from a "super ministry."

49. Changhua Shi, *Market Reform for the Energy System Cannot Be Delayed Any more*, School of Power & Mechanical Engineering, available at <http://pmc.whu.edu.cn/index3.asp?id=3976>.

50. Recently, China underwent its sixth State Organizational Reform. On March 15, 2008, the 11th People's Congress Meeting approved the reform plan of the State Council, which launched the "Super Ministry Reform" in China. See People's Daily, for more details at <http://gov.people.com.cn/GB/46728/114889/index.html> (last visited May 22, 2012).

China's energy regulation department has been changed many times throughout the years. As a result, the energy regulatory authority at the state level is relatively dispersed, and regulation is less effective. In 2003, the Bureau of Energy was set up under the NDRC to create a unified energy authority. However, the administrative level of the Bureau of Energy was not high enough, and it had insufficient leverage to coordinate energy regulatory actions. Currently, the administrative management responsibilities of the energy industry are scattered. Due to the lack of a unified energy regulator, departments responsible for energy-related issues have conflicting agendas, causing problems such as inconsistent policies and overlapping authority. Moreover, the NDRC and the Ministry of Commerce, two major regulators of the energy sector, are both comprehensive, broad departments, and thus lack the capacity to regulate the energy sector, which is very professionally specific and technical, especially the network industries, such as natural gas and electricity.

As the country depends more on energy for its economic development, China should adopt the American model and establish a department similar to DOE. This new department should be able to coordinate the utilization of different types of energy, collaborate with other departments on the state level for related issues, and therefore be able to set up feasible priorities and plans for the country's energy strategy and energy development for the interest of the nation. The "super Ministry of Energy" would not be expected to be able to address all the issues, and there are also interdepartmental problems that cannot be solved. For example, there is the issue of the relationship with the Ministry of Land and Natural Resources on managing coal resources, the MEP on energy conservation and emission reduction, the Ministry of Industrialization and Information on energy industry development, the Ministry of Water on hydro power, and the Ministry of Commerce on energy trading and international exchange. Fortunately, China has recognized this challenge and established a high-level coordinating entity in 2008—the National Energy Commission—which aims at enhancing communication and collaboration of energy strategy among different departments.⁵¹

2. Establishing an Energy Regulatory Commission Based on Separation of Political and Regulatory Authorities

The concept of separation of political and regulatory authorities focuses on setting up separate policymaking and regulatory departments that are independent of each other. This model is better for making regulation more effective and reducing political intervention. Establishing a healthy market for the energy industry requires a neutral

regulatory entity that can minimize political intervention. For example, in the United States, energy market regulation is conducted by FERC, and macro energy policymaking is conducted by DOE. Although FERC is set up within DOE, it does not report to DOE. The 1997 Organic Law of DOE embeds a series of system designs to prevent DOE's political intervention upon FERC's authority. From an organizational perspective, FERC is a committee-based entity, which not only benefits the policymaking process and reduces the unpredictability of its policy because one single person has the authority to issue a policy, but also builds up resistance against party control and political intervention. From the human resources perspective, five of the FERC committee members are nominated by the president, but only three out of the five can be in the same political party. These committee members have to be approved by the U.S. House of Representatives, and the head of the committee is appointed by the president. The length of a term is five years, and the starting and terminating days of the members differ. The members cannot be dismissed, unless for specific reasons listed by law. This design maintains the stability of regulatory policies, avoids a difficult situation where all members are leaving and appointed at the same time, and prevents political pressure from the parties and the president.

From a fiscal perspective, FERC's budget comes mainly from annual fees collected from the industries, and it also charges a usage fee from use of federal lands and dams. Because not all of FERC's financial support comes from taxpayers, it is less likely to be influenced by the government or voters' preference. From a regulatory authority perspective, FERC regulates multiple industries, including the energy production and distribution industries, such as interstate transmission of electricity, interstate transportation of oil pipelines, and natural gas pipelines. This not only reduces regulatory cost and improves efficiency, but also improves coordination among different sectors within the energy industry.

By contrast, although China has an SERC with a similar name to FERC, due to the lack of a law to regulate SERC's policymaking, human resources, and fiscal authority, and to ensure its independence, its regulatory authority is more nominal and difficult to implement. It is hard to guarantee that the SERC executes its authority independent of political factors. China should learn from the FERC model, specifically in the following four aspects:

1. From the organizational perspective, as distinct from FERC, which is established by a special law, the SERC's legal status is granted by the State Council's policy called "three definitions" that sets up its organization, authority, and human resources, which is merely an internal document.⁵² As a result, the legal

51. Jianmin Hua (Secretary of the State Council), *Instructions on Organizational Reform of the State Council*, CHINESE COMMUNIST PARTY NEWS, <http://cpc.people.com.cn/GB/64093/64094/6986510.html> (last visited May 22, 2012).

52. The policy to set up a governmental entity's organization, authority, and human resource is a form of government internal document. It has at least two major shortcomings. First, because it is only a government internal document, but not a law, it has low authority. As a result, the organizational reform can easily be interrupted by political reasons. The establishment,

foundation of the SERC is relatively weak, and thus its legal authority is inferior. In order to strengthen its legal status, China can either include the legal status and authority of the SERC in the new Energy Law or enact an Energy Administrative Organic Law.⁵³

2. From the human resource perspective, although China's political party system differs from that of the United States, there are things that China can learn. For example, the SERC can have its head officer and deputy head start at different times, so that their terms do not terminate at the same time, which enhances the stability of the SERC's regulatory policy. Also, after setting up special nomination and veto criteria, the SERC can have its head and deputy head nominated by the Prime Minister, and decided by the People's Congress.
3. From the fiscal perspective, the SERC can charge regulation fees from electricity enterprises. Article 36 of *Regulations on Electricity Regulation* specifies: "Electricity enterprises should pay electricity regulation fees based on the standards set up by the price authority under the State Council and the Ministry of Finance." However, as differentiated from the American model, all regulation fees paid to the SERC go to the state budget, and the Ministry of Finance would transfer the necessary budget to the SERC based on the SERC's estimation. In other words, the SERC cannot be financially independent. On one hand, if the SERC's entire budget is from industry, it might be easily captured by the energy industry. On the other hand, if the SERC's entire budget is from the state budget, it might be subject to political intervention. In order to solve this dilemma, the authors suggest a compromising approach based on the current practices of the financial regulators in some developed countries, such as the United States and England.⁵⁴ The SERC can set up a special regulation fund and fill it with regulation fees collected from electricity enterprises. Meanwhile, its budget needs to be approved by the country's audit authority before it can draw from the regulation fund. This model gives more financial independence to the SERC from the state budget, so that the SERC

can have adequate resources to hire professionals and improve its regulatory efficiency. It also reduces the risk of the SERC being interfered with by industry, or for political reasons.⁵⁵

4. Currently, the SERC is a single-dimensional regulatory authority—it only regulates the electricity industry. However, there is a lack of an industry regulator in the oil and natural gas sectors. China can apply FERC's experiences and transform the SERC into a comprehensive regulator, who conducts the unified authority to regulate the electricity and natural gas industries. If feasible, the regulation of oil pipe transportation can also be included in its authority. The combination of regulatory authority can save regulation costs, improve regulatory efficiency, enable the regulator to establish comprehensive strategies that consider all energy sectors, and ensure the allied regulatory policies for similar energy sectors.

C. Loosen Economic Regulation

In all markets, there is a risk of market failure, and there is also a risk of government failure. Since the energy crisis, people started paying attention to the high social costs and low efficiency of government regulation, which triggers market liberalization and deregulation in the energy market. Deregulation is actually a repositioning of the contexts and methods of government regulation through establishing market competition, giving market players enough autonomy to make economic decisions. It improves regulatory efficiency by improving market efficiency. Government regulation should be relevant and focus mostly on market failures, and should not replace the market itself. China's future energy legislation should focus on eliminating administrative monopolies and deregulating economic restrictions in the energy sector.

I. Deregulation of Energy Market Entrance

Deregulation is actually a form of unbundling. It distinguishes the natural monopoly sector and the non-natural monopoly sector in the energy industry, and establishes distinct market entrances accordingly. Due to economies of scale and certain technological requirements, it is cheaper to have one energy service provider than several in certain areas of the energy industry—such as the electricity grid, oil pipelines, and natural gas pipelines. In order to increase efficiency and reduce waste of social resources, it is necessary to regulate market entry to restrict the number of providers to avoid waste of resources and redundant construction. For the competitive sectors in the energy industry, such as electricity generation and natural

responsibilities, human resources policies, and budget can easily be revised, which results in the lack of stability and continuousness of the reform. Second, there is a gap between the establishment of the governmental entity and the legislation of special organic laws. Most policies to set up a governmental entity's organization, authority, and human resource are actually trying to give authority to already existed entities. For example, although the SERC was set up in 2003, for years, it lacked the legal basis for its status and authority due to lack of a legitimate legal foundation. Its status was finally legitimized by the 2005 Rules on Electricity Regulation. The authors have discussed the problems with this practice. See Qiu & Li, *supra* note 16.

53. For example, in the draft of ENERGY LAW (EXPERTS' RECOMMENDATIONS), edited by Prof. Junju Ma, Environmental Resources and Energy Research Center, Tsinghua University (2008), Chapter 3, *Management of Energy Monitoring*, establishes the "Energy Regulatory Commission and clarifies its organization, responsibilities, processes, and implementation."

54. This only applies to England, not the entire United Kingdom.

55. Taiwan has adopted FERC's model. Its energy funds are from Taiwan's main electricity companies, and drawing from the funds requires a specific procedure. See Shuru Chen, Study on Taiwan's Electricity Industry Regulatory Institutions (2003) (unpublished Master's dissertation, Taiwan Univ.) (on file with authors).

gas production, over-regulation on market entry has been proven inefficient, and, thus, those market entrance barriers should be lowered by legislation.

For the electricity industry, generation and selling are not natural monopoly sectors, and thus the market entrance restrictions should be loosened. For electricity generation, although the 2004 State Council's List of Government Approved Investment Projects changed the prerequisite of electricity generation projects from special licensing to regular licensing, which demonstrates the trend to lower the market entrance requirements, the current entrance requirements for investments in electricity generation projects are still too high. After making sure that power plant construction complies with the country's macro planning, technological safety requirements, and environmental protection requirements, the regulator should not overspecify economic factors, such as investment scale, location, timing, operation hours, and wholesale price. For example, if the government set the minimum investment scale to require all electricity construction to reach the "economy of scale" of a "big unit," it would harm the development of the distributed energy system and the cogeneration system. Therefore, the energy investment market entrance regulatory system should be changed from licensing to filing.

For the sale of electricity, it is necessary to encourage competition, such as lowering the market entrance for electricity sellers, loosening the restriction on electricity supply regions, and giving "big consumers" the option to choose their electricity providers. From this perspective, China's Electricity Law set up too many market entrance barriers, such as when the law states that "power supply enterprises shall supply power to the users within their franchised service areas."⁵⁶ This provision discourages market competition and should be amended in the future.

Under the background of deregulation, the energy market reform should focus on the competitive sectors. To some extent, the regulation of competitive sectors should focus more on setting up market standards and regulating market players' operational behaviors, and less on limiting market entrance and restricting freedom of businesses.⁵⁷ Of course, lowering market entry barriers does not mean renouncing regulation. On the contrary, it is necessary to re-regulate the energy grid and pipelines, which are a natural monopoly, to ensure that the network is open to all electricity providers, fairly and indiscriminately, as this is key for deregulation.

2. Reforming Energy Price Regulation

Setting a just and reasonable energy price is one of the most important goals of price regulation. However, different countries at different times have distinguished priorities. According to China's Electricity Price Reform Plan, the current goals of the country's electricity price regulation are to attract investment, promote expansion and upgrade

of electricity infrastructure construction, and gradually establish a scientific and standardized electricity-pricing mechanism. To achieve these goals, the energy regulatory legislation should at least clarify the targets, principles, and measurements of price regulation.

China should change the "capital cost-repayment" pricing mechanism into a new approach, with the rate-of-return method as the principle and the price-cap method as the supplement. This pricing mechanism should be established by law.

From the operational perspective, rate of returns and price caps both serve to regulate energy price levels, and restrict the energy enterprises' pricing methods and their total income. However, in evaluating a pricing mechanism, consideration must be given to whether the method can provide reasonable return for investors in the energy industry, in addition to protecting consumers. The difference between these two pricing methods is that rate of return focuses on the rate of return for the investors, while price cap focuses directly on setting a maximum price. Although regulators usually consider similar factors when applying either pricing method,⁵⁸ the methods actually have different effects on the investors' incentives to reduce costs. Because the price-cap method has set a maximum level of price charged, energy enterprises can keep all costs reduced in the process. As a result, enterprises have incentive to reduce costs by investing in technological innovation and management. On the other hand, the rate of return sets the rate of return for investments, and the investors would have the same rate, regardless of their production costs. As a result, it would be more effective for them to increase capital investment or to lobby the regulators to set a high rate. However, because the rate-of-return method allows enterprises to transfer their investment costs to consumers, it better ensures the enterprises' profit level than the price-cap method.

Different pricing mechanisms have their pros and cons, and regulators have to decide which to apply based on the maturity and development of the energy industry in their countries. In developed countries, where energy investments are sufficient, energy infrastructure constructions are more complete, and energy markets are more mature, the priority of regulation should be to improve the energy enterprises' efficiency, and thus to establish incentive-based pricing mechanisms.

By contrast, in China, investment is relatively insufficient,⁵⁹ energy infrastructure construction is behind,⁶⁰ and energy market reform has just begun. There-

56. Electricity Law of People's Republic of China, Article 5.

57. McCONNELL & BRUE, *supra* note 25, at 347 and 486.

58. For example, the potential of energy enterprise to reduce costs, reasonable return for the investors, the changes in demand of energy products and services, etc.

59. Some scholars believe that insufficient investment is one of the causes of the current energy shortage. See Entong Hu, *Studies on the Causes of China's Energy Shortage*, 9 *ECON. REV.* 35-38 (2005). For example, in the energy industry, China has been issuing many incentive-based policies to encourage civil investments to the electricity production industry to solve the problem of insufficient investment.

60. China's power grid network needs more investment. Frequent blackouts can be contributed to the insufficient development of the electricity grid. See

fore, China's priority in energy price regulation should be to attract investment and promote development of the energy industry. Comparing the features of the two pricing methods, the rate-of-return method has obvious advantages, in that it would attract more investments, and thus can better promote energy infrastructure construction and energy industry development. Therefore, China should adopt the measurement with the rate-of-return as the principle and the price-cap as the supplement. Moreover, to reduce regulation costs, the regulator should use the social average cost as the baseline to set the rate of return, as this would also reduce the inefficiency on the enterprises side.

D. Enhance Environmental Regulation

Due to the threat of energy crises and the rise of environmental protection movements in the 1970s, the concept of sustainable development is widely accepted and energy/environmental problems attract much attention. Under the dual pressures of energy security and climate change, China has to pay attention to and strengthen energy environmental regulation, and achieve energy consumption and emission-reduction targets by legislation. The focus should be to promote renewable energy through Renewable Portfolio Standards (RPS) on the supply side and to promote green consumption through DSM.

I. The Supply Side: Promote Renewable Energy Through RPS

From the energy security perspective, fossil energy is a type of nonrenewable energy that will eventually be exhausted. Therefore, promoting the usage of renewable energy can increase energy options, and thus the energy supply security index. From the perspective of ecological safety, promotion of renewable energy can change the energy structure, and thus reduce consumption of traditional fossil energy and reduce greenhouse gas emissions. Although China's Renewable Energy Law establishes the mandatory purchase model and preserves the potential for a quantity-based renewable energy distribution mechanism, the current language in Article 14 is too ambiguous and hard to enforce.⁶¹ The authors recommended that China issue a more-detailed implementation decree for better enforcement.

Under RPS regulation, the regulator ensures achievement of annual renewable energy development goals by monitoring whether electricity sellers have met their mandatory renewable energy purchase requirements. RPS is a type of management by objective. It only sets the total qual-

ity goal of renewable energy supply and allows the electricity sellers flexibility in how to achieve this goal. Under this model, every electricity seller is required to buy a certain amount of electricity generated by renewable energy and will be penalized if it fails to meet this duty. It ensures that the proportion of renewable energy in the total electricity provided to the end consumers can reach the legal requirements. RPS is a regulation based on the quality instead of the price of renewable energy, and the "tradable renewable certificates" (or "green certificates" or "renewable energy credits") are created under this model. The renewable energy credits (REC) are given to each electricity producer using renewable energy to generate electricity, and the electricity producer passes the REC to electricity sellers while selling the electricity generated by renewable energy.

The minimum amount of total REC available is decided by the government's renewable energy development target and equals the total RPS duty of all electricity providers in the region. For example, an electricity provider gets one REC for every trillion kWh of renewable energy it purchases. At the end of every year, each provider must at least obtain a certain amount of REC, based on its duty under the RPS. There are two main purposes for the creation of REC. First, the costs of renewable energy are usually higher than traditional energy, so electricity providers can receive subsidies from the government to recover the extra money they spent on purchasing renewable energy. The level of subsidy is usually the difference between the average social costs for renewable and traditional energy. More importantly, some electricity providers might not be able to purchase renewable energy for reasons other than financial ones, such as geographic restriction or business preference, but they still have to fulfill their duty under RPS. In this situation, they can purchase the REC from other providers, and the price of REC is decided by the market. This actually creates a price incentive to develop renewable energy.

On the one hand, both the mandatory purchase mechanism and the RPS mechanism are market interventions, aimed at creating a market for renewable energy through government regulation. On the other hand, the mandatory purchase model regulates the price of renewable energy, and the RPS model regulates the quality. Under RPS, although the demand of renewable energy was artificially created by government setting up a mandatory proportion of renewable energy in electricity provided in the market, the price is still decided by the market, and it also provides incentives to electricity producers to reduce costs. Thus, the level of government intervention is relatively low. The mandatory purchase model specifies the price for renewable energy and guarantees all electricity generated by renewable energy will be bought, and the renewable energy generators will enjoy profits. It reduces the investment risks for renewable energy. However, the renewable energy producers have no incentives to reduce their costs. From this perspective, the level of government intervention is high. In comparison, RPS has less government intervention

Lessons Learned From the Biggest Blackout in Henan Province: Poor Electricity Grid Construction, SINA NEWS, July 8, 2006, <http://finance.sina.com.cn/g/20060708/16292716258.shtml> (last visited May 22, 2012); *Japanese Media Believes That China's Out-of-Date Electricity Grid Construction Would Become a Barrier of Its Economic Development*, PEOPLE'S DAILY, Nov. 2, 2006, <http://finance.people.com.cn/GB/1038/59942/59949/4989396.html> (last visited May 22, 2012).

61. *Supra* note 13.

in the market, and therefore is preferable. China should introduce the RPS model while it amends the Renewable Energy Law.

2. The Demand Side: Promote Green Consumption Through DSM

DSM can improve the efficiency of energy utilization and optimize resources allocation, and thus achieve energy conservation and emission reduction. Subjectively speaking, DSM is still a nuance in China, and thus there is little legislation based on DSM, such as how enterprises should conduct DSM or how regulators should regulate the implementation of DSM. China should encourage enterprises to adopt DSM by legislation, change the current rigid electricity retail pricing mechanism, and promote green consumption.

First, China should establish the compensation mechanism for enterprises to adopt DSM. IRP requires electricity enterprises to choose investing in DSM projects over building new projects or expanding existing ones, in order to achieve energy conservation. However, investing in DSM projects not only requires higher inputs from the electricity enterprises, but also conflicts with the enterprises' goal to sell more electricity. When designing a DSM policy, China can learn from the model of the 2005 American Energy Policy Law. It allows public utilities to recover their costs due to the DSM plan, which means the electricity industry can charge higher electricity prices to compensate for its losses due to the lower electricity sale level. In addition, the Public Utility Commission (PUC) can grant a financial award to promote DSM plans. The PUC decides the level of the award in consideration of the losses in the electricity enterprises' income, its risk, and fair share between the public utilities and its consumers.

Second, the electricity consumption pricing mechanisms should be more diverse. In recent years, the traditional electricity pricing methods have been criticized for their

failure to reflect the true costs of generating and transporting electricity, and the externalities are more pollution and overconsumption due to the excessively low price. DSM requires the electricity price to reflect its marginal cost, which is new to the traditional price regulation. It encourages consumers to use less electricity and reduce consumption during the peak hours. Therefore, China should establish a more diverse electricity pricing mechanism, and promote green consumption by adjusting its electricity price structure. A good example is the 1978 America Public Utility Regulatory Policies Act (PURPA). This Act grants the energy regulator the authority to set up a pricing structure that encourages energy conservation, and clarifies six basic requirements for electricity retail prices and services: (1) rates should reflect the actual cost of electric power generation and distribution; (2) rates should not decline with increases in electric power use, unless the cost of providing the power decreases as consumption increases; (3) rates should reflect the daily variations in the actual cost of electric power generation; (4) rates should reflect the seasonal variations in the actual cost of electric power generation; (5) rates should offer a special "interruptible" electric power service rate for commercial and industrial customers; and (6) each electric utility must offer load-management techniques to their electric consumers that will be practicable, cost-effective, and reliable, as determined by the state PUC. The Act requires the PUC of each state to audit its price regulatory methods to make sure that they comply with the U.S. Congress' requirement. However, Article 19 in China's Management Rules on Electricity Conservation only provides some principal requirements, but does not specify who is responsible for price structure regulation. In the future, to promote the regulation of DSM, China's energy legislation should clarify that the SERC has the authority to regulate energy prices.

In conclusion, the energy industry in China is still undergoing market reform, and energy-related legislation should instruct the direction of reform and improve the efficiency of the energy market.