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Environmental Protection Legislation on China's Energy Development and *In-situ* Conversion

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Abstract China's poor energy development and *in-situ* conversion legislation, environment laws and energy laws lead to a severe environmental issue in energy source. This paper uses comparison and logical methods to discuss Chapter 4 of *Energy Law (Draft for Soliciting Opinions)*. Energy development is taken as a separate chapter; *in-situ* energy conversion is added to energy processing and conversion, common features are summarized to form general provisions and other provisions. According to respective characteristics of system for total amount control of energy development, performance guarantee system, environmental trust fund system, energy retaining system and environmental lien system, incorporate them into energy development, *in-situ* energy conversion and energy processing and conversion, in the hope of solving China's shortage of supply for environmental protection laws on energy development and *in-situ* conversion, responding to times of environmental protection, and optimizing China's Energy Law.

Key words Energy development and *in-situ* conversion, Environmental protection, Local legislation, Basic environmental legal system, Energy legislation

China's energy development starts early and can be the Spring and Autumn and the Warring States Periods. By comparison, China's *in-situ* energy conversion starts very late. From the middle of the 1980s, people began to call upon *in-situ* conversion of Shanxi coal, to reduce pressure of coal transportation^[1]. In 2000, coal conversion to electric power appeared in Hequ County of Shanxi Province. After this, *in-situ* conversion of petroleum, natural gas, water energy and wind power is gradually launched in China.

During long-term practice of energy development and over ten years of *in-situ* energy conversion, it has been found that it promotes economic and social development on the one hand, and leads to grave environmental crisis on the other hand. For example, energy development damages the vegetation in development regions, influences growth and breeding of plant resources, threatens biological diversity, and pollutes surrounding environment; *in-situ* energy conversion severely pollutes environment and squeezes environment capacity of implementation regions. Therefore, environmental hazard of energy development and *in-situ* conversion can not be underestimated.

With continual rise of total energy consumption, China is facing greater and greater environmental pressure. To realize a benign cycle of energy consumption and environmental protection, China should spare no effort in environmental protection legislation of energy development and *in-situ* conversion. However, the supply of environmental protection legislation is in serious short. This situation not only influences ease of China's energy crisis, hoodwinks people in thinking drawbacks of envi-

ronmental protection legislation, but also makes people miss the non-environmental solution to energy and environmental problems.

In line with the above situation, it is necessary to study the environmental protection legislation of China's energy development and *in-situ* conversion using comparison and logical methods on the basis of actual situations of China's energy development and *in-situ* conversion.

1 Definition of energy development and *in-situ* conversion

In foreign energy legislation, there is terminology of energy development, for example, the *Act of Development, Use and Promotion of New Energy and Renewable Energy of the South Korea*. Besides, there is word of energy development in legislation, but no explanation of energy development. In monographs and papers on energy of Japan, America, Latin America, Romania and Thailand, there is no explanation of energy development. It is shown that foreign countries pay attention to actual effect of energy development, while the explanation of energy development fails to receive due respect. We can not find reference of definition of energy development from these energy legislations and researches. As to domestic energy legislation, energy development is often used in combination with energy utilization, but no legislation gives explanation. In existing formal publications, only the *Research of Energy Basic Law* written by Zhang Yong gives explanation of energy development. In the book of *Discussion of Energy Law*, the author Lu Zhenyong said that the energy development construction has the same meaning as energy development, but he did not use the words energy development. In addition, the definitions of energy development come from Baidu Baike (an online encyclopedia provided by Baidu Incorporation) and Soso Baike (an

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online encyclopedia provided by Tencent Soso search engine).

In Baidu Baike, energy development is defined as the whole process from energy resource investigation, survey, plan, and design to construction, exploitation and processing.

In Soso Baike, energy development is defined as a series of production technical and economic activities, including prospecting energy resource, exploiting coal, petroleum, natural gas, and nuclear fuel, building hydroelectric generating station, thermal generation station, and atomic power station, exploring and utilizing new energy such as wind energy and solar energy.

In the *Research of Energy Basic Law*, Zhang Yong states that energy development refers to production technical and economic activities of prospecting energy resource, exploiting coal, petroleum, natural gas, and nuclear fuel, building hydroelectric generating station, thermal generation station, and atomic power station, exploring and utilizing new energy such as wind energy and solar energy with the purpose of expanding energy capacity or increasing energy production equipment. Specifically, it includes energy development construction plan, works for earlier stage of energy development construction, site selection, prospecting and energy exploitation^[2].

The definition given in Baidu Baike is too broad in extension. Energy processing is a production section after energy development, so *Energy Law (Draft for Soliciting Opinions)* includes it into the processing and conversion section. Besides, this definition only describes process of energy development, but not stating purpose and specific content of energy development.

Soso Baike gives a comprehensive energy development object, but in fact the energy development does not contain energy utilization, because energy development is the means of energy utilization, while the energy utilization is the purpose of energy development. In the field of energy law science, energy development and utilization is legislated and researched as two different stages. Further, energy development is not merely a series of production technical and economic activities. For example, the development of oil and gas in the South China Sea has obvious political color and involves the problem of state sovereignty. Zhang Yong's definition of energy development absorbs relevant content from Soso Baike and Baidu Baike. This is pioneering in definition of energy development. However, it still has drawbacks: (i) the purpose of energy development should be energy utilization and security, rather than expanding energy capacity or increasing energy production equipment; (ii) earlier works of energy development construction should include planning, site selection and prospecting, so their relation is not a parallel progressive one; (iii) this definition follows drawbacks of that from Soso Baike.

In brief, the above three definitions of energy development are discussed in a broad sense and all include preparatory works for energy development. The energy development in narrow sense only refers to a series of activities from energy exploitation to processing and conversion or *in-situ* conversion. This paper adopts its broad sense definition: energy development is a series of activities that take resource as working object to realize the objective of resource utilization and security.

Such definition expounds object and purpose of energy development, and not limits energy development to production technical and economic activities.

In foreign energy legislations and researches, there is the utilization of energy conversion, but they are only cases and no explanation is given. For example, article 3 of *Implementation Rules for the Law on Reasonable Utilization of Energy of Japan* specially describes different methods of energy conversion, and *Integrated Energy Plan of Republic of South Africa* also discusses the energy conversion^[3]. In the paper *Energy Conversion Goes Local: Implications for Planners* written by Andrews, Clinton J from Rutgers University, there is use of energy conversion^[4]. However, the stated energy conversion is not China's *in-situ* conversion of energy, but in fact the conversion of energy processing. Thus, we can not absorb nutrient for defining the *in-situ* energy conversion.

In China, the practice of *in-situ* energy conversion surges forward. In June, 2011, the executive vice-mayor of Guiyang City, Ma Changqing, gave his definition of *in-situ* conversion when interviewed by the *21st Century Economic Report*. The *in-situ* conversion is to change the relatively extensive and inefficient resource utilization means, promote resource-type industrial chain extending towards precise and deep processing, and increase energy utilization efficiency and industrial added value^[5]. Obviously, this definition states clearly the purpose of *in-situ* energy conversion and the function of *in-situ* conversion on changing economic growth mode. But it still has following drawbacks: (i) not explaining what exactly the *in-situ* conversion is; (ii) not making clear the position of *in-situ* conversion in the resource industrial chain; (iii) not stating the implementer of *in-situ* conversion; (iv) not indicating the ultimate purpose of *in-situ* conversion.

With reference to the above definitions, in my opinion, the *in-situ* energy conversion is a relatively high-efficient resource utilization mode applied by energy producing regions to turn their energy advantages into industrial, economic, development and competitive advantages, increase energy industrial added value and maximize the energy utilization. This definition expounds the position of *in-situ* energy conversion in the energy industrial chain, essence, purpose, and implementer of *in-situ* energy conversion. From its position in energy industrial chain, it is an energy industrial section between energy development and energy utilization; as to its essence, it is a high-efficient resource utilization mode; from its implementation purpose, its primary purpose is to increase energy utilization efficiency and energy industrial added value and its ultimate purpose is to maximize the energy utilization and turn energy advantages into industrial, economic, development and competitive advantages; as for its implementer, the *in-situ* energy conversion is implemented mainly by energy-producing regions.

2 Current situations of environmental protection legislation on energy development and *in-situ* conversion in China

Energy is not only an essential material guarantee for rapid

economic development, but also an important pollution source, so energy production and consumption exert enormous impact on environment^[6]. Energy development mainly leads to "output-type" environmental problem, *i. e.* ecological disruption, while energy conversion and utilization mainly causes "input-type" environmental problem, *i. e.* environmental pollution^[7]. As a matter of fact, environmental pollution resulted from energy development also constantly reducing environmental carrying capacity. In addition, energy development and *in-situ* conversion also occupy environmental capacity of implementation regions and influence agricultural and industrial production of implementation regions.

In short, the demand of China's economic development for energy has reached an unprecedented level, and constant soaring total energy consumption creates a growing pressure to environment. For example, the total energy consumption was 3.066 billion tons of standard coal in 2009, 3.250 billion tons in 2010, and 3.480 billion tons in 2011, respectively increasing by 5.2%, 6.0% and 7.0% compared with the same period in the previous year. Particularly in 2011, the growth speed and increment reached 7.0% and 0.23 billion tons, both setting a record in recent years^[8]. In this situation, China naturally becomes the largest country of pollutant emission. And it is very urgent to regulate environmental hazard of China's energy development and *in-situ* conversion with the weapon of laws. Therefore, it is required to consider the supply for legislation control of environmental hazard of energy development and *in-situ* conversion in China.

2.1 Situations of environmental protection legislation on energy development and *in-situ* conversion in local legislation China's energy development and *in-situ* conversion are basically implemented in counties and cities under the prefecture level, while the legislative authority is under the control of legislative bodies above the provincial level. Such inappropriate situation causes that only few provinces have made local regulations on environmental protection for energy development. In most energy development and *in-situ* conversion implementation regions of China, illegal activities in energy and environment remain in an uncontrolled state due to no direct legal provisions for compliance. Even in those few provinces that have made laws on environmental protection for energy development, the provisions are different and it is easy to lead to different punishment for the same kind of action. In addition to no environmental protection court, illegal activities in energy and environment mainly rely on administrative law enforcement. Once a single relief means fails, the energy and environmental problems will become worse.

2.2 Situations of environmental protection legislation on energy development and utilization China has established the environmental protection legal system for energy development and utilization with *Environmental Law* as guidance, *lex specialis* of energy as main parts and *Energy Law (Draft for Soliciting Opinions)* as supplement. In appearance, China's environmental protection legal system for energy development and utilization looks like perfect, but in essence, it conceals

many serious defects.

(i) Drawbacks of basic system of environmental law.

The basic system of environmental law brings environmental protection in China to the scientific, institutional and legalized road, great promotes development of environmental protection undertaking, and makes outstanding achievements; promotes coordinated development of economic construction, social development and environmental protection. Besides, it reduces generation of new pollution and prevents sharp deterioration of environmental quality. It promotes pollution control and improves environmental quality. In addition, it ensures implementation of environmental protection responsibility and improves environmental management level. And it establishes and perfects environmental legal construction^[9]. With rapid economic development but increasing severity of environmental problem, the function of China's basic system of environmental law on environmental protection is gradually inefficient. As to drawbacks of China's basic system of environmental law, most scholars believe that the color of planned economy is too heavy, it lacks coordination between systems, and the operability is low^[10].

(ii) Defects of energy and environmental protection legal system in *lex specialis* of energy.

China has already had four special laws on energy, including *Law on the Coal Industry*, *Electricity Law*, *Renewable Energy Law*, and *Law on Energy Conservation*, but no *Oil and Natural Gas Law* and *Atomic Energy Law*. As for environmental protection in coal, petroleum, and natural gas development and utilization, there is no special law and regulation, provisions are merely scattered in related laws and regulations and normative documents. In China, the legislation on environmental protection for hydroelectric development is still seriously vacant. In particular, the environmental protection legislation on renewable energy remains blank; biomass energy, ocean energy, and geothermal energy development lack necessary laws and regulation. These may lead to chaos and disorder of development and pollute and damage the environment^[11]. At present, legal system of nuclear energy in China has following problems: (i) lack of basic law on nuclear energy development and utilization *Law on Nuclear Energy*; (ii) legislation system taking administrative regulations as major parts, leading to low regulation power; (iii) imperfect specific systems^[12].

2.3 Drawbacks of energy and environmental protection legislation in *Energy Law (Draft for Soliciting Opinions)*

In the *Energy Law (Draft for Soliciting Opinions)*, the environmental protection is placed at the end of its legislation purpose, receives little attention; basic principle of environmental protection is nearly virtual and hard to implement; it incorporates public participation system, ecological environmental compensation system and resource tax system. Compared with past laws, the incorporation of ecological environmental system and resource tax system is a great leap. However, it is general principle and fails to satisfy demand of allocation of energy benefit. What's worse, the responsibility and duty of environmental protection are obscure for development and utilization enterprises.

In addition to not issuing and implementation yet, this legal system for environmental protection is just a scrap of paper. All of these causes that energy development and *in-situ* conversion fail to realize the objective of environmental protection relying on basic system of energy law.

3 Establishment of environmental protection legislation on energy development and *in-situ* conversion in China

The *in-situ* energy conversion is a practical energy utilization method oriented towards to maximizing benefits of energy producing regions. Current situations show that major energy producing regions will not let slip such opportunity of turning energy advantages into industrial, economic, development and competitive advantages. However, the transportation of China's coal is kept constantly on the run and power transmission system is unsmooth. These aggravate the implementation of *in-situ* energy conversion. As stated above, energetic implementation of *in-situ* energy conversion will definitely lead to environmental hazard, so it needs laws to prevent and control this problem. The above indicates that the supply of environmental protection legislation is not sufficient for China's energy development and *in-situ* conversion. Therefore, it is required to establish appropriate environmental protection legislation.

3.1 Environmental protection legislation model suitable for China's energy development and *in-situ* conversion In China, there are few existing local legislations of environmental protection on energy development and *in-situ* conversion, while energy development and *in-situ* conversion are widely implemented in major energy producing regions. Local legislations on energy development and *in-situ* conversion freely formulated by provinces harm energy security of the state and cooperation and exchange between domestic energy producing regions.

Environmental protection legislations and energy laws are poor in pertinence, have many legal loopholes and lack some necessary laws, so it is impossible to achieve the transformation from general to specific environmental protection legislation on energy development and *in-situ* conversion.

Since the *Energy Law* is still at the stage of soliciting opinions, it is proposed to divide and integrate its *Draft for Soliciting Opinions*: take the energy development as a separate chapter and include article 32 to article 38 into energy development; add a chapter to specially specify *in-situ* energy conversion and energy processing and conversion, sum up common features of both to form general provisions and other provisions, add *in-situ* energy conversion in article 40, and incorporate article 43 into this chapter, and add prevention and control measures for energy and environmental hazard; integrate paragraph 1 of article 30 into article 5, take article 41 and article 42 as separate articles and place them after article 5; take paragraph 2 of article 30 as a separate article and include it into paragraph 2 of article 16; integrate article 31 into article 4 of the General Provisions; integrate article 39 into paragraph 5 of article 23.

This proposition is made for following reasons:

(i) Such proposition realizes equal treatment of *in-situ* en-

ergy conversion and energy processing and conversion, and provides laws for environmental protection of *in-situ* energy conversion to comply with.

(ii) Taking energy development as a separate chapter gives prominence to its important position in energy industrial chain. Scholar Li Yanfang has objection to provisions of energy development in *Energy Law* (*Draft for Soliciting Opinions*), she thinks that "energy development and utilization" is specific and microcosmic, so it is suitable for special energy laws, such as *Law on the Coal Industry*, *Electricity Law*, *Renewable Energy Law*, etc.^[13]. Taking energy development and energy processing and conversion to separate chapters is because they belong to different energy industries.

(iii) Integration of law articles makes legislation more scientific. Equal protection of energy investment benefit belongs to energy investment property system; energy resource property right is an important aspect of energy security; articles 32 through 38 are development of various energy resources; energy base construction has been included into the state energy planning, so it is fair and sensible to include it into paragraph 5 of article 23. Enterprise safety and environmental protection duty and ecological environmental compensation run through the whole process of energy development and utilization, rather than limited to energy development and processing and conversion. Therefore, it is appropriate to place it after article 5 of General Provisions.

In addition, such revision can incorporate *in-situ* energy conversion into China's energy legislation scope. Also, it is helpful to understand clearly the relationship with energy processing and conversion, and solves the environmental protection problem of the *in-situ* energy conversion.

3.2 Legal system of environmental protection legislation on energy development and *in-situ* conversion in China

The above paragraphs have proposed ways to solve legislation model problem of environmental protection law on energy development and *in-situ* conversion within *Energy Law* (*Draft for Soliciting Opinions*). It is known to all that energy and environmental hazards are widely spread, far-reaching and difficult to restore and prevent, thus apart from the existing systems in *Energy Law* (*Draft for Soliciting Opinions*), it is required to increase some legal systems that are favorable for environmental protection of energy development and *in-situ* energy conversion.

3.2.1 Adding the total amount control system, performance guarantee fund system, and environmental trust fund system in the energy development chapter. In some sense, huge consumption of energy is directly proportional to the accumulation of environmental hazards. The total amount control system of energy development can control growth of energy consumption on the one hand, so as to limit the environmental hazards into an acceptable degree. On the other hand, it can restrict the improper way of energy development and overcome huge resource waste in the course of energy exploitation.

Performance guarantee fund is certain amount of special fund saved by energy enterprises for environmental protection before obtaining permit of energy development and utilization. If

no oil pollution or other environmental pollution accidents happen in the course of energy development, such performance guarantee fund will be returned to energy enterprises. Such method will stimulate energy enterprises to make best effort to implement environmental protection, so as to avoid forfeit of the guarantee fund^[12].

Environmental trust fund system requires energy enterprises provide certain amount of fund as environmental trust fund before prospecting and developing energy. In the course of energy development, if there is no oil pollution or other environmental hazards, this fund will be used as donation fund and its interest will be used for environmental protection and prevention of environmental pollution. Once there is occurrence of environmental damage, this fund will be used to alleviate or remove environmental pollution. If the fund is used, energy enterprises should timely make supplementation to reach the specified amount^[12].

As prior prevention measures of environmental hazards, the performance guarantee fund system and environmental trust fund system are mandatory for energy development and *in-situ* conversion enterprises, but such mandatory regulation can urge enterprises to prevent environmental hazards.

3.2.2 Adding energy retaining system and environmental lien system in *in-situ* energy conversion and energy processing and conversion articles. Energy lien system refers that if an energy enterprise fails to perform obligation of environmental protection, government authorities have right to exercise lien of environment on this energy enterprise, to alleviate or remove impacts of environmental pollution^[12]. As post control measures of environmental hazards resulted from enterprises, the energy lien system is helpful for covering the shortage of prior prevention measures.

Energy development should satisfy demand of industrial development of energy producing regions and meet requirement of projects of energy producing regions for energy. Therefore, it is essential to add energy lien system in *in-situ* energy conversion and energy processing and conversion articles, to guarantee conversion demand of *in-situ* energy conversion and energy processing and conversion articles.

4 Conclusions

In summary, lack of environmental protection laws on energy development and *in-situ* energy conversion is a major rea-

son for frequent occurrence of energy and environmental hazards in China. It is very urgent to revise article 4 of *Energy Law (Draft for Soliciting Opinions)*, take the energy development as a separate chapter, and add *in-situ* energy conversion and relevant legal system. This is an inevitable requirement for energy development and *in-situ* energy conversion, also an important part of self-improvement of *Energy Law*. It is believed that if this proposal is adopted in *Energy Law*, it will definitely make great contribution to solution of energy and environmental problems. However, it should be noted that this legislation model and system assumption does not solve the environmental problems from criminal perspective, nor give explanation on improving basic system of environment law and energy law, which are not subjects of this paper and should be solved through relevant laws.

References

- [1] CUI JZ. Transformation of Shanxi coal[J]. Outlook, 1985(48): 139. (in Chinese).
- [2] ZHANG Y. Energy basic law research[M]. Beijing: Law Press, 2011. (in Chinese).
- [3] YANG CB. International and national energy law[M]. Sichuan: Sichuan Publishing House, 2009. (in Chinese).
- [4] ANDREWS CJ. Energy conversion goes local: implications for planners[J]. Journal of the American Planning Association, 2008, 74(2): 231–254.
- [5] LI MY. Transformation of mine resource in Guiyang[N]. 21st Century Business Herald, 2011–06–03(027). (in Chinese).
- [6] HUANG ZZ, ZHAO QY, TAN BP. China energy law science[M]. Beijing: Law Press, 2009. (in Chinese).
- [7] CAI SQ, WANG HH. Ecology of China energy law[J]. Present Day Law Science, 2008(5): 3. (in Chinese).
- [8] ZHANG ZR, LI YQ. GDP energy-saving index uncompleted in last year[N]. China Energy News, 2012–02–27(1). (in Chinese).
- [9] LI ZP. The general evaluation and future direction of environment law basic system[EB/OL]. (2012–02–19) http://www.dss.gov.cn/Article_Print.asp?ArticleID=74873.
- [10] WANG SY, WANG ZX. China environment law 30 years[M]. Beijing: China People's University Press, 2008: 478. (in Chinese).
- [11] LI B. On China energy environment and law regulation[EB/OL]. (2006–09–21) <http://www.riell.whu.edu.cn/article.asp?id=28512>.
- [12] YANG ZW. On China energy safety law guaranteeing[M]. Beijing: China University of Political Science and Law Press, 2009. (in Chinese).
- [13] LI YF. Constitution of energy law in China[Z]// XIAO GX, YE RS. 2008 China Energy Law Research Report. Beijing: Law Press, 2009.

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