Energy Policy and the Balance between Public and Private Sectors In China and France, 1973-2011

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Table of Contents

List of Figures

To

Professor Germaine Hoston, my most admired mentor and friend

and

My most beloved parents and friends

Chapter 1. Introduction

"The real debate today is about finding the right balance between the market and government. Both are needed. They can each complement each other. This balance will differ from time to time and place to place."

-Joseph E. Stiglitz[1]

Both China and France have achieved enormous economic growth during the post-WWII era. China became the world's largest energy consumer and its economy has grown at an average real rate of about 10% per year over the last decade[2]. Its economic growth is the major driving force for the country's growing demand for energy. France, being one of the most industrialized countries, also has a big appetite for energy since it has limited domestic energy supply and its economy ranks the fifth in the world[3]. Though the two nations have different political systems and distinguished cultural background, their energy industries share somewhat similar features in terms of sectorial reformations and energy policies.

1.1 Working Thesis and Conceptual Question

Over the last thirty years, the energy industries in both countries have evolved significantly. Their experiences are important not only for the development of their own industries, but also for political scientists in analyzing the fundaments of public policy, especially energy policy in our case. The term "policy" implies that it is something that is adopted by some entity that has authority to enforce it. The very idea of energy "policy" therefore inherently suggests the involvement of government in the energy sector. However, the fact that the governments adopted the liberalization reforms shows that the

[1] Altman, Daniel. Managing Globalization. In: Q&Answers with Joseph E. Stiglitz, Columbia University and the International Herald Tribune. Oct 11, 2006. Web.
[2] www.eia.gov. Sept 2012.
[3] Ibid.
[4] The starting point for analysis is 1973 because it was a crucial year for most nations. In the

governments have tried to limit their roles in the industries and encourage private sector and free market forces. The purpose of this paper is to explain the question of how the government's energy policy strengthens the public sector and restricts the private, or vice versa. How much freedom is given and what are the reasons for it? The underlying motivation is to discover the sound reasons behind the above phenomenon and to form a theoretical approach to comprehend the liberalization process taken place in energy industry.

The energy industry is chosen as the target field because it is not only one of the greatest and most complex commercial markets but also the ground for almost all other economic activities. More importantly, the energy sector has always been the backyard for policy implementation in most countries due to its insurmountable significance in the creation of social well-being and economic prosperity. By definition, energy policy is the instruments that are adopted by countries to address questions of: how to assess energy needs for a hopefully growing economy, and producing strategies to meet those needs and make the various choices about how to do so. As a pure product of the government, the energy policy also represents the government's ambition about what to achieve, what to change, and what to control in the industry.

In order to properly address this "problematique," a few aspects regarding the energy policy of China and France should be addressed and examined. In fact, previous academic researches have approached the subject and draw some partial conclusions. In Chapter 2, a set of literatures about the study of energy policy in the respective countries will be reviewed. The result shows that prior studies provide significant insights about the role of energy policies in evolving energy markets in China and France. In the case of

China, some scholars consider general energy policies to be ineffective in promoting liberalization reforms throughout the entire energy industry, while others do illustrate the opening up of certain sectors. Meanwhile, scholars suggest that French energy policies in the past ensured absolute state power in the energy production, transmission and distribution processes. Yet recent changes broke this tradition and allowed for market competition mechanism. Therefore, both the energy industries in China and France have adapted a mixed economic model, and this provides the basis for our analysis. However, they do not offer a satisfactory answer to the conceptual question that this paper addresses because their studies do not contribute to constructing a theoretical framework of energy policy studies.

Again, the main purpose of this paper is to explore the influences of energy policies of China and France over the relationship between the public and private sectors in the economy. Since energy policies themselves epitomize government's attempts to regulate or make changes in the economy, the above working thesis statement serves as a step to answer the following conceptual question,

> "How do governments reconcile the inherently 'public' sector bias of policies regarding public goods with commitments to free market economies, so that some level of balance between the two sectors is achieved?"

Through the study of the goals, implications and choices that are presented in the energy policy of the respective countries within the timeframe of 1973 to 2011[4], the paper will further address these sub-questions:

[4] The starting point for analysis is 1973 because it was a crucial year for most nations. In the eastern sphere, it follows after President Nixon's visit in China and this Sino-American Rapprochement opened up access for foreign world to the post-War China. In addition, it also lay down the foundation for later economic reforms. In the western hemisphere, great nations have encountered the 1973 energy crisis, which triggered some important institutional and structural change in influential European countries. The ending point of 2011 is chosen because,

1. What decisions have been made about what types of energy to use?
2. What choices are made among various sectors?
3. How have the policies affected the balance between consumer and energy interests?

The hypothetical response to the first question involves the discovery of the ultimate goals of countries' energy policy. Decisions about the types of energy to use made by the government and reflected in the energy policies are based upon their security. The priority goal of the government has always been to ensure that energy resources, which are crucial to supply the commercial, residential and public use, are safeguarded. The same logic applies to China and France where energy has been important to fuel the economic performance. With increasing importations of energy resources, the Chinese government were motivated to reform and liberalize the energy industry because free market were more sufficient to attract foreign investments and thus achieve energy diversification. On the other side, French government reinforced its control after confronting energy crisis and launched a state-led plan to develop nuclear power. The two countries depart at this point since they have different cultural and industrial backgrounds. Nonetheless, both of their energy policy priorities involve strategic planning of achieving energy security.

Secondly, this paper argues that the choices made among various sectors are based upon one important factor, which concerns the influences of foreign organizations. In China, all three major energy sectors are found be more liberalized after China's entry to the WTO because its rules have speed up the liberalization process and encouraged

presumably, the Fukushima nuclear incident has some considerable influences over other country's energy policy. However, the effects are still not translucent since limited amount of studies has done concerning the topic to the time being.

free market operations. In France, the situation is similar. In fact, the EU has gained more supranational power to command the French government to open up its market.

Thirdly, the policies affected the balance between the consumers and energy interests by utilizing a powerful instrument: price. Again, those industries who also operate in the international markets or under the rules of international organizations are more likely to adopt unfixed prices and/or open access to consumers. In conclusion, the influence of international groups such as the WTO or the EU greatly affects government's strategic planning for energy policies priorities.

Therefore, in order to be compatible with those rules and plan for securing energy supply, governments would reconcile the inherently "public" sector bias of policies regarding public goods with commitments to free market economies. As a result, some level of balance between the two sectors is achieved.

1.2 Methodology

A. Fundamental Methodology

The fundamental method used here is the case study method. The cases are comparable in that the unit of analysis is the national state, respectively China and France, based on a categorization of three periods. In the case of China, the chronology is based on the economic reforms proposed by Deng Xiaoping the 1980s. Throughout 1990s until the present, the reforms have continued to be the backbone of the economic and energy policy up the Chinese government. As the evidence shows, during the period of pre-1980s, Chinese policymakers proposed some pro-competition market policies, but they were not widely carried out because the political and social revolutions have been the focus of the entire nation. From1980s to 1990s, the Chinese government initiated the

first wave of economic reforms, which welcomed foreign investment in some degree of decentralization of the national market. This reform has spread out to other energy sectors and continued from 1990s to present until the current leadership of Xi Jiping.

For France, the first period will start from the end of WWII to 1973. During this time frame, France was recovering from the post-war devastation and the French industry expanded considerably from the end of WWII until the eruption of the 1973 oil crisis, where the Western countries faced severe petroleum shortages. In the post-oil crisis period from 1973 until 2000, the French government has changed their strategies in terms of types of energy uses, but has made little change in the system of the national energy markets. The real structural reform took place when the European Commission commanded energy market liberalization within the EU community. Although numerous laws and governmental mandates have been passed in France, the energy sectors still have not fully been liberalized even to the present time.

In sum, the periodization for evaluating the energy policies and their impacts on energy markets in China and France will be as follows:

Country	**Period I**	**Period II**	**Period III**
China	Pre-1980s	1980s-1990s	1990s-2011
France	Pre 1973 oil crisis	1973-2000	2000-2011

B. Boundaries

In order to conduct a comprehensive examination of the relations between energy policy and its impact on the balance between the private and state sectors, the subject will be dissected into the following parts:

1. Identify major energy policies or top energy priorities that were implemented by China and France during the given period.
2. Determine the change of structure of the energy industry as a result of liberalization reforms. Special attentions will be given to the emergence of new players; structural or ownership changes of the energy companies; a change of the structure and function of the government
3. Identify proper rules of WTO and EU with respect to energy markets and determine their influences on the national energy policies. Furthermore, use those information and resources to pinpoint the overall thesis statement.

1.3 Reservations

Dissident voices would question the appropriateness of the approaches applied in this paper regarding the analysis of government's policy intentions. Some would argue that a better approach would be to examine the policy making process in China and France. This method is simply impracticable in the case of China because the decision-making process is rather a black box to the outsiders. Evidence shows that large SOEs can shape the result of economic policies. Kornai (2000)[5] argues that, in China, the managers of a state-owned enterprise may also be a party office or the other way around. Because of the deep connections (关系) evolved between the government and enterprises, Kornai indicates that the ruling party in fact welcomes private ownership and market mechanism which would firstly benefit their interests (p. 33). Scholars like Peter

[5] Kornai, János. "What the Change of System From Socialism to Capitalism Does and Does Not Mean." Journal of Economic Perspectives. Vol. 14, No. 1. 2000. P. 27-42.

Katzenstein[6] may tend to investigate the relations between state and sectors of the economy by identifying the amount of centralization in society and in the state. In the French case, it is true that the state has a considerable degree of centralization and the labor union often poses as a major influential social group that represents the centralization of the society. Together with other interest groups, they will impose pressure over the decisions made by the government, and thus the government will have limited economic policy instruments. However, the researches show that such power does not exist in either the French or the Chinese energy industries. In France particularly, general public has been, in fact, in support of extensive government intervention in not only energy sectors but also other aspects of the society. Therefore, the above two factors will not be discussed in great depth in this paper. Other proposed factors are all state specific, and that is they have different influences in distinguished countries and cannot be promoted to the general level of analysis.

1.4 Outline

With the thesis statement in mind, the literature review conducted in Chapter 2 analyzes the previous academic works that attempted to investigate the evolvement of the energy industries. Organized in a chronological order, they provide a decent overview of the past and present situations in China and France. Based on their work, Chapter 3 identifies the decisions made by the governments regarding the types of energy to use. In this part, readers will see that the decisions have increasingly been impacted by international organizations such as WTO and EU. In chapter 4, the influences would be

[6] Katzenstein, Peter. "conclusion: Domestic Structures and Strategies of Foreign Economic Policy." Between Power and Plenty: Foreign Economic Policies of Advanced Industrial States. Madison: University of Wisconsin Press, 1977. P. 311.

discussed in a greater depth regarding the different treatments of various sectors as a result of energy policies. Finally, Chapter 5 identifies the choices that the government made between "public" good and free market forces as an illustration in the relationship between consumer and energy interests. Chapter 6 serves as a conclusion section that intends to make an overarching argument based on the previous chapters.

Chapter 2. Energy Industry and Previous Studies

Published studies addressing the issue of energy policy and the public-private balance are relatively few. Since almost no literature specifically compares the energy policies of China and France, the review of previous studies would be divided into two parts: 1) Studies of energy policy in China; 2) Studies of energy policy in France. This chapter not only aims to cross-examine the previous studies about the topic but also intends to provide the readers with a general view of the energy industries in the perspective countries of China and France.

2.1 China

It is generally agreed that China has privatized its economic sector following the lead of Deng Xiaoping since 1979. The trend of reforms also affected the energy industry even though the liberalization process was slower and more difficult to introduce. Over the past six decades, the Chinese government has grown accustomed to preparing five-year plans, which consist a series of social and economic development initiatives. Since the adaptation of the first five-year plan in 1953, economic and energy concerns have become increasingly prominent over the years. However, those plans only provided general direction with no specific resolutions and guidelines for implementation. In addition to the five-year plans, the government established five energy laws (法律), more than twenty sets of administrative regulations (行政法规) and numerous local decrees and guidelines[7]. In 2012, the White Paper of China's Energy Policy was also promulgated.

[7] Cheng, Xinhua. The Historical Analysis of the Relationship between the Energy Law and Policy and its Implication to the Establishment of the "Energy Law."我国能源法律与政策关系的历史考察及其对《能源法》立法的启示. Chinacourt.org. 2010. Web. 20 Dec.2012.

With such a variety of laws, regulations, and decrees at hands, scholars like Xinhua Cheng, attempted to access China's energy policy in chronological order, while National Renewable Energy Laboratory (NREL) analysts[8] categorized the policies into three levels. According to Cheng, the development of the energy law and policy can be divided into four major periods and evaluated each period individually: 1949-1978; 1978-1992; 1992-2000 and after 2000. Though Cheng's work does not provide much insight to the influence of energy policy over the balance between the private and public sectors, it provides periodization as a level of analysis and helps to eliminate the period of 1949-1978 since energy policy was not a national priority at that time. On the other side, the NREL, Yao et al. (2005) and Guizot (2007) proposed a three-level analysis where the first two levels of policy are established by the central government of a country, while the local government establishes the third level[9]. Though the NREL analysts conducted their study mainly over renewable energy policy, their method, together with Yao et al. and Guizot, still applies to general policies and provides a practical method to distinguish between the central and local incentives in the policy formulation. Furthermore, Guizot suggests the feature of time-scale found in most Chinese policy where they are prepared every five or ten years depending on the national strategies and budgetary conditions. For general energy policies, Yao et al. indicates that, unlike other countries, the Chinese government delineates their general goals based on five-year forecasting plan. This research paper will take into consideration their work, not only because they provide a

<http://article.chinalawinfo.com/Article_Detail.asp?ArticleID=71007>

[8] National Renewable Energy Laboratory. "Renewable Energy Policy in China." Nrel.gov. April 2004. Web. < http://www.nrel.gov/docs/fy04osti/35786.pdf>

[9] Based on their methods, the first-level policies provide general direction; the second-level policies include goals/objectives and development plans; and the third-level policies articulate the practical and specific incentives and managerial guidelines of the local governments.

first-hand analysis of the energy policy, but also because they help to define the period and level of examinations of the topic.

Another type of policy analysis addresses directly at the relationship between the energy policy and the balance between the private and the public sectors. In his book Politics of Energy Policy in Post-Mao China, Tai Hwan Lee provides some insights about China's energy policy in the post-Mao period, primarily from 1950s to 1980s. Though analyzing the industrial management policy, investment policy, price policy and their influences in the respective energy fields, Lee concludes that management policies fluctuated between decentralization and centralization during the first wave of reforms while investment policy encouraged non-governmental funding resources and price policies includes a combination of administrative and market prices (184-185). Meanwhile, Lee also conducted an analysis over the relationship between the state and the enterprises, mainly the state-owned enterprises. Lee found that, as a result of a series of institutional changes and reforms, "the center could not successfully exercise the degree of control that it had before" (p. 95). The enterprises were given more power to bargain with the government in changing the unreasonable targets and they have changed from direct control by the top-level leadership to indirect control over the subordinate organizations (p.88, 101). In the light of this analysis of energy policy during the period from 1970's and 1980's, Mao (1990)'s discussion highlights some other aspects of the economic decentralization process. She argues that economic reforms generated successful results in energy production and conservation measures due to the use of foreign capital and technology, the exchange of personnel and information, and more decision-making ability of enterprises (p.60). In conclusion, Cheng, Lee and Mao's work

on China's energy policies during the early periods provide us the background of reforms. They suggest that the Chinese central government had realized the importance of decentralization process during the early times; however, the goals for liberalization and privatization were still beyond the concern.

Following Tai Hwan Lee, scholars like Philip Andrews-Speed and Rangaswamy Vedavalli again noticed the trace of "swing effect" of more recent China's energy policy objectives that were drafted in 1980's and 1990's[10]. In fact, they even argued that, "China's energy policy has traditionally consisted of an aggregate of targets for investment, production and consumption for each individual industry, such as coal, oil, gas and electrical power.[11]" Moreover, Andrews-Speed and other scholars[12] furthered research on this topic by examining the overall performance of China's energy policy, in doing so, they criticized its lack of coherence and subjectivity to sudden changes, claiming it to be a direct result of inefficient institutional structure of energy policy making in China. Both of them approach the topic of private-public balance by analyzing the institutional structure and the reform process in 1993 and 1998. However, Andrews-Speed does not give much credit to the liberalization reform as Vedavalli does. Andrews-Speed argues that "most aspects of the internal energy market are highly controlled and there is little integration with international markets" because he believes that the reform

[10] The literature review here refers to Philip Andrews-Speed's book-Energy Policy and Regulation in the People's Republic of China. Netherlands: Kluwer Law International. 2004. Print.

[11] Ibid., p. 59. Vedavalli, Rangaswamy. *Energy For Development-Twenty-First Century Challenges of Reform and Liberalization in Developing Countries*. Singapore: Anthem Press. 2007. Print. P. 136.

[12] V. Smil, 'Energy Development in China. The Need for a Coherent Policy', *Energy Policy* vol.9, (1981): 113-126. S. Nakajima, 'China's Energy Problems: Present and Future', *The Developing Economies* vol. 20, no. 4 (1982): 472-498. R.A. Manning, *The Asian Energy Factor. Myths and Dilemmas of Energy Security, and the Pacific Future* (New York: Palgrave, 2000)

was mainly hampered by a range of political, structural, and technical factors[13]. Meanwhile, Vedavalli considers China and Argentina to be successful economic liberalization reformers among developing countries. He argues that the reforms of commercialization and corporation, defined by Vedavalli as "the process of making an enterprise operate according to a profit-orientated, competition commercial framework, have been continuous since 1985 to 2004, the date that he finished his research (p. 116). After two decades of sector transformation, China has become a mixed economy where both state-owned and private companies coexist. Though he also noticed that competition in the energy sector only existed in marginal activities, he insisted that energy liberalization measure had been incremental.

In addition to their different prospective over the energy industry of China, they also apply different approaches to their studies. Andrews-Speed specifically evaluates the structure of government, the performance of different industries including petroleum, electrical power and coal after the 1998 reforms in order to examine its context, nature and results[14]. On the other hand, Vedavalli conducts an analysis of the sector based on four categories: energy pricing, regulation, commercialization/ corporation and privatization/private investment[15]. For each field, he illustrates that there were attempts to privatize the sector and encourage market forces. Yet, he also indicates that there were limitations to the transition. Above all, Andrews-Speed and Vedavalli both recognize the liberalization efforts made by the Chinese government, but the former sees a more controlled energy sector than the latter who admits that some sectors have less competition than others.

[13] Andrews-Speed, Philip. P. 74.
[14] Ibid., see chapter 10.
[15] Vedavalli, Rangaswamy. See chapter 5.

Broadly speaking, it is true that the energy market liberalization process has been graduate and slowly implemented. However, scholars indicated that certain industries and sectors enjoy greater freedom than others. For example, Cherni and Kentish (2007) argued that the industry of Chinese electricity power has become less state controlled. They indicated that a "dual system" emerged since 1990's where state government still held predominate decision-making power while there was a "decentralized generation system at the periphery, owned by government organizations at different levels and by private enterprises" (p. 3617). Andrews-Speed and Dow (2000) indicated that the rapid diversification of sources of finances for constructing power plants and stations has been one of the crucial developments because it has stirred up the fast growth of generating capacity (p.339). Chen and Yang (1997) identified that many industry segments were open to investment, such as the power construction and transmission projects (p. 65). Many scholars considered coal industry as the most liberalized market in China. Shen et al. (2011) observed that small-scale coalmines (SCMs) flourished during 1980's and major state-owned coalmines (MSCs) were put in the competitive market to struggle by the liberalization reforms. However, from 1993 to 2011, the industry experienced close down of SCMs and MSCs amalgamated into large-scale coal mine groups. Above all, Andrews-Speed and Dow summarized the situation well by stating that China's energy sector in general is "a sprawling, heterogeneous and multi-layered organization, with a complex web of relationships between the players" (p. 348).

2.2 France

There exist very few long-term and comprehensive studies of French energy policy and its impacts on the relationship between the private and public sector. Until the

recent European Union's (EU) mandates that aim to create competitive national and integrated EU energy market, scholars started to pay more attentions to the energy policy in France. The fact that the EU started to have influence in national energy policy making reveals some most serious issues and discussions that concern not only the European energy industry but also the international market. As a result, there is only a limited amount of print and online resources include specific details of French energy regulations before the EU energy policy heated up. According to Le Commission De Régulation De L'Énergie (CRE), who only provided documents regarding energy regulations since 2000, lists that there are a total of 117 orders, 9 decisions and 82 decrees[16]. There were also an Energy Policy Act of 2005 and Law NOME of 2010 aiming to "re-launch European energy policy in a perspective of sustainable development" (EDMS Hong Kong Ltd, 2007). As energy becoming the heart of all concerns including geopolitics, environment, economic competitiveness, consumption, etc., a project of organizing the rules started in 2005 and completed in May 2011. This Energy Code of Order No. 2011-504 articulated the overarching rules of the energy market and it also transposed EU Directives 2009/72 and 2009/73 which respectively concern the common rules for the internal electricity market and natural gas prices.

After World War II, most European countries including France suffered fatal destructions as numerous cities were destroyed and millions of people were killed. The situation was especially devastated for France, the once regional hegemony. Scholars like Gabrielle Hecht, Martin Chick and Jean Fourastié explored the French government's response to the nation's shattered industry. Through examining the energy industry and

[16] http://www.cre.fr/documents/reglementations/(offset)/200#block_content

electricity sector, they both illustrate that French leadership agreed upon an energy policy, which intended to nationalize the energy sector. Hecht (1998) specifically argued that the WWII had led "the French to question the foundations of their social, political and economic life...most agreed that the remedy…lay in rethinking the role of the state in directing the economy (in general) and in directing industrial, scientific, and technological development (in particular)" (p. 27). Therefore, when the former president Charles De Gaulle proposed a strong state with national planning and powerful leadership, the incumbent officials and the public did not oppose, but rather welcomed and embraced. Chick (2007) and Fourastié (1979) confirmed that the plan was soon put into practice since the electricity supply industry in France was nationalized and Électricité de France (EDF) was established in 1946. They claimed that this model of strong state intervention had remained fundamentally unchanged for the next three decades and because of this policy, the French experienced a 30 years of economic growth and low unemployment which is the so-called period of Les Trentes Glorieuses (1945-1970).

In 1970s, the western industrialized countries experienced a series of energy challenges posed by oil exporting and mainly Arabian countries. Under the pressure of the Arab oil embargo, the French economy was seriously affected: increased energy prices dampened economic growth and triggered stagflation in France. By analyzing different responses of five industrialized countries to the 1973 oil shock, G. John Ikenberry discovered that a common strategy for all affected western governments was to safeguard energy resources including "diversification of oil sources away from the Middle East, diversification away from oil to other types of energy, and conservation

measure to lower absolute levels of energy consumption" (Ikenberry, p.107). Moreover, he argued that the French leadership in particular adopted a policy of neomercantilist adjustment strategy that emphasizes a great degree of national control over foreign energy resources. With this approach, the French government could apply organizational and financial instruments to impose a "central planning and high levels of government organizational capacity" (p. 111). Since then, the oil industry was under the direct control of the government. As a consequence, the leadership body also started to insert its influence in other energy sectors. At the same time, Cawson, Holmes and Stevens, Green, Milner, and Underhill have all used case studies across French economy to suggest that this supposedly centralized and autonomous French structure is often internally divided since the state is also responsive to and sometimes captured by social interests.[17] Furthermore, Hall (1986) discovered that the French economic policy gradually diminished state's intervention in the post war period. Therefore, one could assume that the trend of privatization should have stroke the energy industry as well if the 1970s oil crisis had not happened. From this evidence, we could conclude that France chose a different approach than that of China in terms of solving national economic problems and energy security problems. Due to the unique French energy crisis management strategy, the centralization and nationalization policy was reinforced and has not changed until the EU has obtained more influential power over the national government.

[17] Alan Cawson, Peter Holmes and Anne Stevens, 'The Interaction between Firms and the State in France: The Telecommunications and Consumer Electronic Sectors', in Wright and Wilks, eds, Comparative Government-Industry Relations, pp. 10-34; Diane Green, 'Strategic Management and the State: France', in Dyson and Wilks, eds, Industrial Crisis, pp.161-92; Helen Milner, 'Resisting the Protectionist Temptation: Industry and the Making of Trade Policy in France and the United States during the 1970s', International Organization, 41 (1987), 639-65; and Geoffrey Underhill, 'Neo-Corporatist Theory and the Politics of Industrial Decline: The Case of the French Textile and Clothing Industry', European Journal of Political Research.

Since the late 1990s to recent years, French energy market had undergone a progressive liberalization that would end national monopolies under the push of the EU decrees (Fages and Sarrinen, 2012). Fages and Sarrinen indicated that European Commission's 1996 and 1998 directives concerning energy market competition were "progressively transposed" into French law of 2000. Another wave of privatization took place in 2003, the French law of 2003 envisaged to open markets to all professional and residential consumers by 2010. Most recently, "Law NOME" (Law No. 2010-1488 of 2010) adopted the EU's third energy to further open up gas and electricity markets. In addition, Meritet (2010) argued that France has been evolving gradually from a position of "black sheep," in a sense that the state has considerable intervention power over the energy industry and has become a compliant of the EU's energy objectives.

Though French energy laws have transposed European Commission's privatization decrees, industries such as electricity market still lack a vivid competitive environment. Scholars like Strauss-Kahn and Traca illustrated that the French government has, in fact, postponed liberalization process in the electricity power market. In contrary to Strauss-Kahn and Traca who argued that the generation sector has a competitive environment, Volker Barth questions its competitiveness since he observed that only a number of small producers with trivial importance coexist with large producers and they mainly produce for their own needs (p. 13). Nonetheless, Barth categorized 4 stages of French electricity market liberalization, which mainly happened during the early 2000. Since then free market access was granted to all French consumers. The same situation could be found in the natural gas market. In his article "Slow progress in liberalization of France's gas market," Thierry Chaumeil the dominant

companies enjoys a strong position in French gas sector and "new competitors have been unable to more than dent its near-monopolistic market share. But, although still in its infancy, competition is showing some progress."

Conclusion

Previous studies have presented a very detailed examination of energy sectors in both China and France. They outlined the general development of the industries, and discussed energy policy in relation to the formation of the sectors. However, they mainly focus on the outcome of the liberalization and concern whether the process is successful or not. Therefore, they do not really touch upon the problematique proposed by this paper because they do not specifically conduct a close analysis over the question of why government liberalize some sectors but not others and how the government reassert its power over those liberalized industries.

Chapter 3- The Energy Industry and Its development

Over the past century, both France and China have experienced rapid economic growth and energy crises. During different periods, governments have had to apply different energy policy strategies. In the case of China, past and recent evidence shows that the state has transformed its energy strategy from complete self-sufficiency to reliance on global market for importation of oil and natural gas since the 1990s. Meanwhile, the French case suggests a different trend in which France has attempted to achieve some level of energy independency by developing nuclear energy since the 1970s oil crisis. By examining the historical evolution of energy use and the change of policy goals, this section argues that energy security has become the most concerning issue on the government's agenda. In order to meet growing energy demands, one common and frequent approach for the state is to import energies and diversify energy resources. As a result, the Chinese and French governments chose to open up their doors for foreign participation, and also encouraged free market forces in the domestic markets.

3.1 China's Energy Use and Its Development

Within the span of five decades, China has emerged from being an economically underdeveloped country to one the fastest growing economy in the world. According to World Bank, China's GDP growth averages about 10 percent a year and has become the second largest economy after the United States[18]. China's total primary energy consumption ranks number one in the world and has experienced a steep growth from 17.287 Quadrillion Btu before 1980 to 109.62 Quadrillion Btu in 2011[19]. The reasons for

[18] World Bank, http://www.worldbank.org/en/country/china/overview.
[19] U.S. Energy Information Administration. http://www.eia.gov/countries/country-data.cfm?fips=CH#tpe

this success are manifold, yet the most important factors should definitely be accredited to its continuous market reforms and sufficient amount of energy supplies during the developing years.

Historically speaking, China economic performance was highly dependent on the productions of agricultural commodities. Energy resources such as coal appeared in households for the purpose of heating during the dynasties. In the post-war era, the development of China's energy industry was extremely backward in comparison to the Western industrialized countries, such as the United States and Great Britain. With the establishment of the first and second five-year plan (1953-1962), the government adopted the Soviet Union style of centralized economic planning and socialist industrialization. However, China suspended the alliance with Soviet Union because of the ideological and political differences, the heavy industry in China was left alone and the Chinese had not mastered the technologies to continue running the programs. At the same time, Mao Zedong's profound ambition was to "Surpass the Grate Britain, and Chase after the United States." Then he launched the movement of "Great Leap Forward" which intended to aggressively transform the agrarian economy into a modern communist society. Due to a lack of well-planned policies and extensive studies, the "blind" industrialization and collectivization resulted in catastrophe that greatly hampered the development of heavy industries and agricultural sectors. Third and Fourth plan (1966-1975) tried to recover from the disasters, but were again impeded by the nation-wide political campaigns, especially the Cultural Revolution lasted from 1966 to 1976. During this period from 1949 to pre-1980s, one could see that the Chinese policy makers

perceived the importance of establishing an efficient heavy industry including energy. In fact, the commercial energy industry grew rapidly for the period from 1949-1960 under the central command. But, the average growth rate of 26% per year of coal production was crippled by the Great Leap Forward. Meanwhile, the discoveries of oil reserves (Daqing in 1959, Shengli in 1963, Dagang in 1964, and Liaohe in 1969) contributed to increasing use of oil in the later years even after coal recovered since 1968. Therefore, in the pre-1980s, coal and oil became the two major energy resources for economic development and primary export commodity, in exchange for industrial plant and technologies (Lee, p.60). In the perspective of policy goals, Daojiong Zha has claimed that China had self-sufficiency under strained international circumstances because of a US-led embargo from 1950 to 1971. Especially, in the mid-1970s, the economy was on the verge of collapse, though China had "energy self-sufficiency but not energy security" (Zha, p. 179-180).

During the period following Mao's death, the party successors decided to re-launch an economic growth plan. Unlike before, Deng Xiaoping, in his 1978 Open Door Policy, emphasized the crucial role of foreign direct investment (FDI) and free market mechanism in the reforms. The idea of "it doesn't matter what of the cat is, as long as it can catch mice, then it is considered to be good" indicated that there was a change of mindset among the party leaders who have become more flexible about ideology and the party reformists acknowledged that a partially free market system was essential for the further development of the domestic economy. More importantly, an abundant amount of energy reserves is also a fundamental factor for the government in pursuing this approach because a lack of technology and scientific expertise were major obstacles in the previous

periods as illustrated in the Great Leap Forward movement. Consequently, the main policy goal for China is to expand current energy exploration projects while discovering more energy resources in response to a surging energy demand[20]. From 1980 to 1990, one can see there was a trend in the diversification of energy resources including hydroelectric, natural gas, crude oil and coal (biomass is a major type only seen in rural areas). Figure 3.1 illustrates that oil production increased rapidly. In the year of 1990, it accounts for nearly 20% of total production of commercial energy (Levine et al, p.407). Until the late 1980s, oil and coal have continued to be among of China's major exporting commodities.

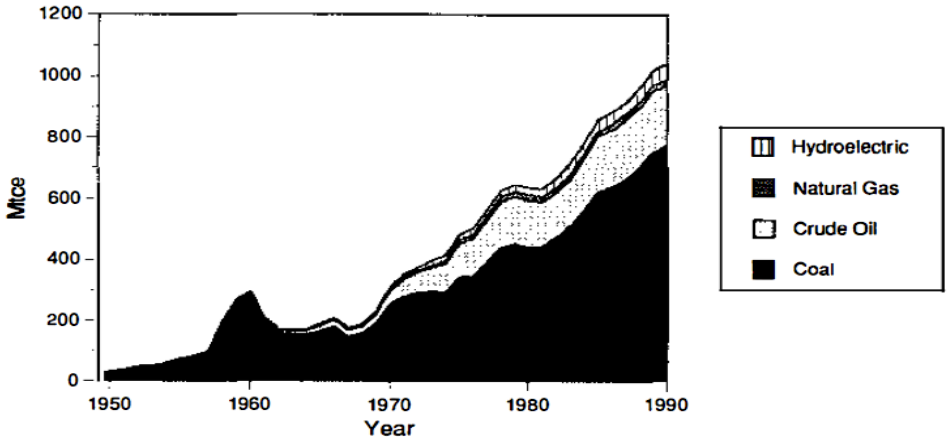


Figure 3.1: Primary energy production by source, 1949-1990. The graph is based on the data provided by Ministry of Energy. 1990. Energy in China. Beijing. And State Stat. Bur. China. 1991. Statistical Yearbook of China. Beijing. (Lavine et al)

The rapid growth of China's economy continued while increased amount of energies are consumed by the industrial, commercial and residential sectors. Figure 3.2 shows that the consumption of primary energy experienced a steep increase. In the year of 1990, 26 quadrillion Btu were consumed, but in 2011, the number rose up to 110

[20] In the 6th five-year plan (1982-1986): the energy sector received high priority, and the plan also concentrated on development and expansion of major coal-mining areas throughout China.

quadrillion Btu[21]. At the same time, coal has continued to be the single main energy resource for China. Figure 3.3 reflects the evolution of use of energy in China and illustrates that the share of coal has drastically increased around 2003 while the use oil also rose due to its accumulating demand. However, natural gas and hydroelectric have remained secondary for China's total energy consumption.

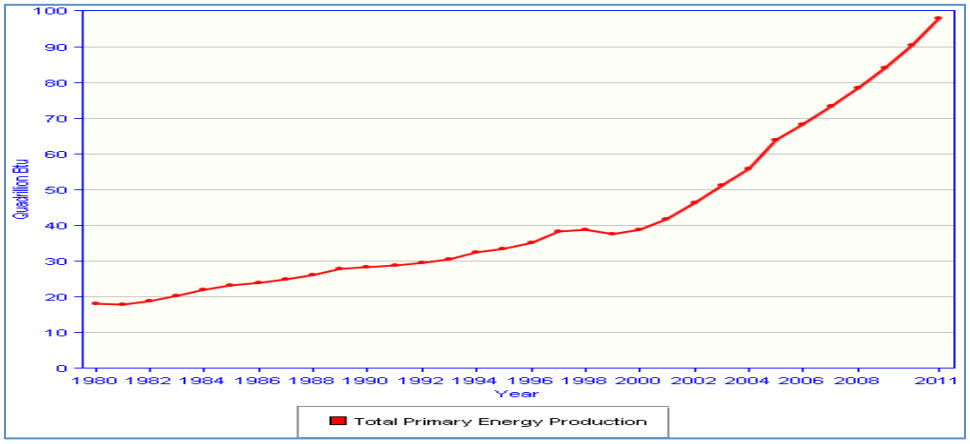


Figure 3.2: Total Primary Energy Production
Source: U.S. Energy Information Administration.

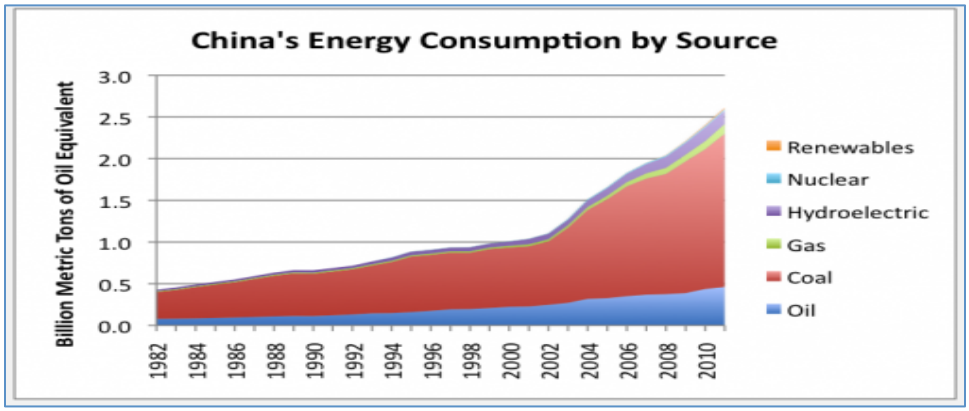


Figure 3.3: China's energy consumption by source, based on BP's Statistical Review of World Energy data.

In the middle and late 1990s China experienced two major shifts in its energy balance (Andrews-Speed, 2004; Vedavalli, 2007, and Guizot, 2007). First, in 1994,

[21] Statistic numbers are provided by U.S. Energy Information Administration. http://www.eia.gov/countries/country-data.cfm?fips=CH#tpe.

China's oil consumption exceeded domestic oil production for the first time since 1949. In order to meet the requirements of the country's fast-growing economy and fill this oil gap, Chinese government decided to solely rely on the imported oil products. Since then, the level of net oil imports has substantially increased (Figure 3.4). By looking at the social change and oil production, Andrews-Speed (2007) argued that the situation was caused by a substantial rise in the oil demand for transportation purposes and combined with a failure to raise the level of oil production.

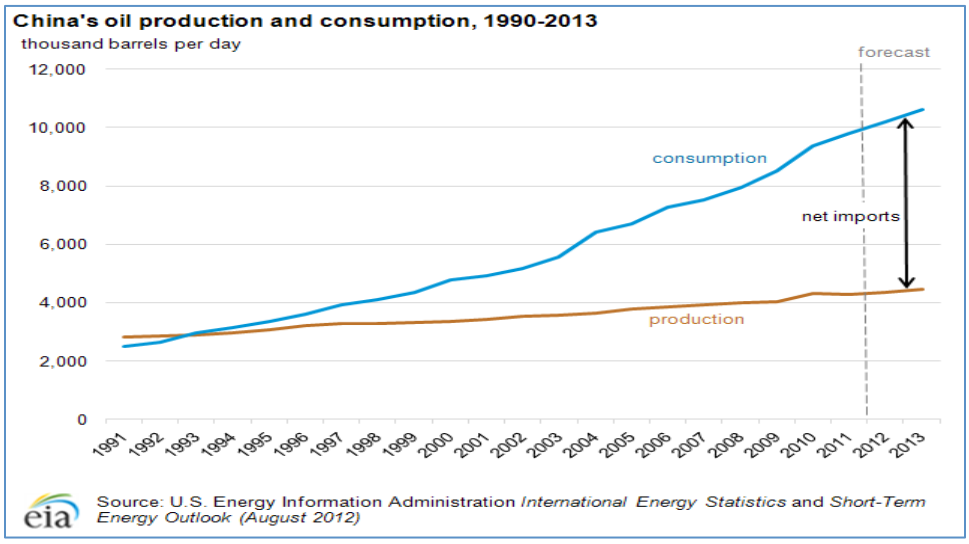


Figure 3.4: U.S. Energy information Administration.

The second shift occurred in 1998 and 1999 when energy consumption in China fell for two consecutive years as an indirect result of the Asian financial crisis. Guizot (2007) argues that the petroleum amount reserved by the two major Chinese oil companies at the time is only equal to 21 days of China's crude oil imports while the United States' reserve can last 158 days and Japan's is 161 days (p. 9). More importantly, as EIA indicates in the year of 2006, China also became a net importer of natural gas. In 5 years, the amount of imported natural gas product increased from 43.3 to 994.9 billion cubic feet (EIA). As a result, evidence shows that the Chinese government

has relied more significantly on the global energy markets during the period of 1990s to 2011. According to Guizot (2007), the import dependency for China was 34 per cent in 2001 and will reach 50 per cent by 2020 (p. 9). However, this also means that China has become more vulnerable to the uncertainty of the global oil markets and unexpected international deadlocks could fetter the country's economic prosperity. Energy security has become increasingly important and an urgent task to achieve. For the first time, the goals of energy security become manifold since the answer does not lie in discovering more coal or oil domestically. Rather, an effective energy strategy requires more approaches to address the issue. As a result, the 9th and 10th five-year plans (1996-2005) emphasize energy conservation and diversification of energy infrastructure, but with a focus on oil and gas.

3.2 France's Energy Use and Its Development

Like China, France was also recovering from the post-WWII devastation. From 1945 to 1975, France, in fact, experienced a rapid growth in population and economy under the strong state-led policies. Until recently, France has the world's fifth largest economy by nominal figures while China ranks the second according to the World Bank[22]. Unlike many other European countries, the French energy model is unique due to the country's history and geography. Aware of its limited indigenous resources, the state has always placed national energy independence and technological innovation at the core of its energy policies.

When analyzing the energy mixes that were produced during the periods before 1973, Dominique Finon has identified traces of evolution in the pattern of energy

[22] GDP ranking. The World Bank. http://data.worldbank.org/data-catalog/GDP-ranking-table.

consumption in France. He indicates that coal was the former dominate energy resource because it provided basis for the process of industrialization across Europe. During the decades of 1950 and 1960, hydrocarbons substituted coal due to the fad of motorcars and environmental concerns (Finon, p. 136-137). At the same time, oil products provided by foreign countries, especially the United States and Poland were much cheaper than "home-made" coal. Consequently, the contribution of coal moved from providing one-half of the French energy requirements in 1960 to be under one-fifth by 1974 (Chick, p. 182). Figures provided by Chick (2010) suggest that the configuration of energy supplies in France actually transformed from a diversified mix to reliance on a single energy. In 1960, France's primary fuels included oil (37%), coal (52%) and hydro-electricity (15%). However, the share of oil increased to 73% in 1974. Observing the changes of energy supplies in France during this early period, one can argue that energy security was not yet the top priority on the agenda of the government. Although most of France's energy resources were imported elsewhere around the year of 1973, the state perceived this supply as low-cost and abundant. The series of 1970s oil shocks soon confronted the Western importing countries.

During the 1970s, the Arab OPEC countries proclaimed a series of energy embargos against the United States. Together with the oil embargo, the OPEC group also threatened the Western industrialized countries of high oil prices and disrupted supply of energy exports. Although the United States was their main target, John Ikenberry argues that the Europeans and Japanese were more affected than the United States because they relied more intensively on the OPEC energy products. Due to its high dependence on the OPEC oil, France became "politically vulnerable" and experienced "disruptions to

national economies, felt across the industrial world" (Ikenberry, p. 107). Therefore, not only France, but also most of other Western countries who relied heavily on the OPEC imports developed common energy security policies. The goals of those policies reflect the three approaches to achieve of energy security: 1. Diversification of oil sources away from the Middle East; 2. Diversification away from oil to other types of energy; 3. Energy conservation. Table 3.1 shows that France had a relatively higher dependence with regard to OPEC exports, but its percentage of oil imports decreased about 5% every year since the oil shocks took place.

Table 3.1: Crude oil imports as a percentage

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
United States	6	7	10	11	15	18	20	19	19	16	14
France	67	71	75	74	64	68	65	60	64	57	49
Germany	42	42	42	40	37	39	44	42	39	41	31
Japan	68	71	74	72	70	69	70	68	66	63	57

Source. Data in International Energy Agency, Energy Balances of OECD Countries, 1971/1981 (Paris: OECD, 1983). Provided by Ikenberry (2009)

Following the oil crises of the 1970s, France initiated a comprehensive plan to develop nuclear industry and build extensive pipeline networks for natural gas in order to find alternatives for oil. With the ultimate goal of energy security as indicated in the "Messmer Plan" (named after prime minister Messmer), the energy policies intended to achieve energy diversification objectives and to significantly reduce the dependence on energy imports. This was a huge nuclear power program based on the idea of "all-electric and all-nuclear society" (Hadjilambrinos, 2000). According to Volker Barth, the high amount of nuclear and hydro electricity helped to make the energetic independence of

France remain relatively stable around 50% since the late 80% (Barth, p. 8). In addition to the development of nuclear energy, the French government also employed some other instruments to limit dependence on imported energy. By analyzing the changes that occurred in the industrial market share of energy consumption during 1970s-1980s, Javier Estrada and Ole Fugleberg discovered that oil's percentage of the market share fluctuated greatly since 1972 while natural gas obtained a strong and constant share of the market until 1982 (table 3.2). At the same time, coal experienced a steep decline in its production and utilization among the residential sector. The market share of coal has declined from 62% in 1960 to 5.4% in 1985 (table 3.2). This observation does not conclude that France was completely rejecting to coal and oil resources during the time, but rather the government's plan was not to have any significant dependence on either of them due to the reasons discussed above.

Table 3.2 French industrial sector French residential sector

	Market Share Obtained (%)				Market Share Obtained (%)			
Year	Coal	Gas	Oil	Electricity	Coal	Gas	Oil	Electricity
1970	0	13	79	8	0	15	75	10
1971	0	14	83	3	0	7	88	5
1972	0	72	0	28	0	12	80	7
1973	13	42	0	45	0	13	83	4
1974	34	28	32	7	0	33	0	67
1975	0	100	0	0	0	45	0	55
1976	0	33	56	11	0	37	26	37
1977	0	92	0	8	0	47	0	53
1978	0	41	52	8	3	22	57	18
1979	0	18	69	13	0	89	0	11
1980	0	34	0	66	0	100	0	0
1981	0	100	0	0	0	0	0	100
1982	0	30	0	70	0	4	0	96
1983	0	0	100	0	11	44	0	44
1984	40	44	0	16	0	53	0	47

The data is provided by Estrada and Fugleberg (1988)

The rapid development of nuclear technology accelerated the expansion of nuclear energy. During the 1990s, nuclear power soon became one of the predominant energy resources in France. In the electricity sector, evidence shows that the share of nuclear power in the process of electricity generation has eminently increased. Figure 3.4 illustrates that from last 1980s to early 2000s, nuclear energy and hydroelectricity contributed significantly to electricity generation while the role of traditional energy forms started to diminish. According to the data provided by Eurostat, France produces almost half of all the nuclear energy in the European community.[23]

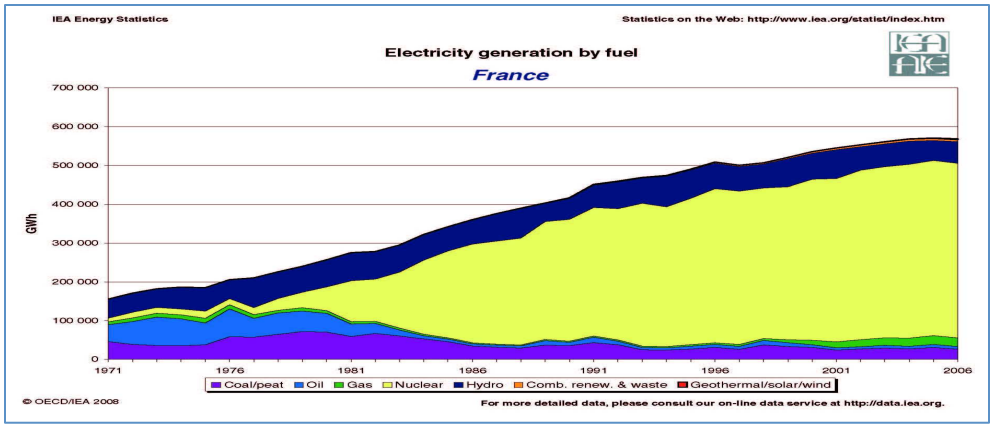


Figure 3.4. OECD/IEA 2011.

Most recently, Dominique Maillaird, the French Ministry of Economy, Finance and Industry, drew conclusions regarding the transition of France's energy market by stating that, "in the 20th century, we produce fossil fuels like coal, natural gas and oil. But nowadays, we import all the coals, we use because we have closed all the coalmines[24]. We import 97% of natural gas, 98% of oil. The only indigenous resources we have are

[23]Eurostat.http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00080&plugin=1.

[24] The last coal mine was closed in 2004 according to CNN in the news article "France closes its last coal mine-the final shovelful of coal has been mined in France, bringing to an end an industry nearly 300 years old." http://news.bbc.co.uk/2/hi/europe/3651881.stm.

renewables, mainly hydroelectricity and biomass, and also nuclear[25]." This high level of importation is based on the fact that nuclear generates nearly 75% of electricity and contributes to almost 50% of France's total energy production in recent years. Over decades, the French government has strategically transformed the energy composition of the nation based on the goals delineated in the Energy Act of July 2005. The law expressed a major objective of the government is to "contribute to national fuel independence and secure supply." Nuclear energy, renewables and hydroelectricity have rapidly replaced traditional energy sources (figure 3.5). However, one also observes that imported oil and natural gas still play an important role in achieving France's goal of energy independency and environmental conservation.

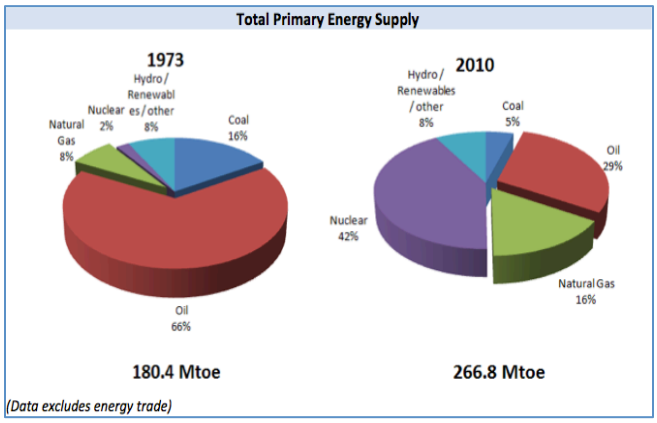


Fig 3.5 Energy Balances of OECD Countries, IEA

Conclusion

The historical evolution of energy use and the change of policy goals demonstrate that energy security has always been the top priority for the governments because it not only directly relates to the economic performance, but also affects the political stances of

[25] The interview with Dominique Maillaird was conducted in the video named "France's Nuclear Future-Energy Policy and Climate Change." The program was sponsored by The Open University and uploaded on Youtube.com on Jul 26, 2011. http://www.youtube.com/watch?v=8yjuF8JdeKM.

the national governments. By comparing China's and France's energy usages, this section suggests that the respective governments have adopted similar approaches to meet growing energy demands and energy crisis. Those policy instruments include energy importation and resource diversification. Of course, they have also applied energy conservation and improvement of energy efficiency[26]. In the case of China, the country has transformed its energy strategy from complete self-sufficiency to reliance on global market for importation of oil and natural gas since the 1990s. However, domestic coal production still constitutes a large share of energy supply. Meanwhile, France has also attempted to achieve some level of energy independency and diversification by developing nuclear energy and renewable energy extensively since the 1970s oil crisis.

Like China, France has relied on the international market and the European community for oil and natural gas importation, which contributes to 50% of total primary energy supply. Therefore, pursuing energy security is the core reason why countries seek energy supplies from outside world. And the consequence of this policy is foreign participation in the domestic sector, which push for liberalization. With this international aspect, the next section will pursue more thoroughly on the impacts of the international organizations on energy policy decisions and which ultimately affect the balance between the public and private sectors in the economy.

[26] They are not the main focus of the paper. The author believes they are the two additional instruments that the government use to achieve the goal of energy security. Therefore, the subject on the top of the list should still be "energy security."

Chapter 4. Structure of China's and France's Energy Industry

Chapter 3 helps to identify the types of predominate resources that nations rely on in order to satisfy the needs of residential, commercial, industrial, and transportation sectors. We learn that China and France both have unique energy profiles and industry developments based on the availability of natural energy resources, and the balance of energy production and consumption. For ambitious countries like China and France, achieving economic prosperity is one of the most adequate means to restore their historical world leadership since the end of World War II. As a result, energy security and development, which are the bases for economic growth, have remained the top priority on the agenda for both governments. Evidence provided in Chapter 3 shows that internal and external impacts have posed considerable challenges to their domestic energy industries. In order to ensure energy security, both countries have modified the compositions of their energy use in response to specific issues. However, this change alone is not sufficient enough in solving the problems like economic stagnation, because the modification may trigger changes in other parts of the whole process. It is the responsibility for the governments to draft energy policies accordingly. Therefore, the interest of this section is embedded in the question of "What choices are made among various sectors in the energy industry?"

By examining the sectorial changes taken place from pre-1980s to 2011, this chapter argues that in both countries, some sectors are more liberalized than others. The reasoning behind this situation rests in: 1) the government's goal to pursue energy security in order to achieve economic growth; and 2) the pressure inserting by

international organizations that their rules of games directly or indirectly changes the government's policy in the energy industries.

4.1 What Contributes Sector Liberalization

Before analyzing the specific situations in China and France, or any other unique country, it is important to discuss the components we observe that contribute to the process of liberalization or privatization. Scholars like Philip Andrews-Speed categorize four reforms that liberalization compresses. (Asian Energy Market, 2004, p. 143)

1. A change in the structure of the energy industry
2. A change in the ownership of the energy companies
3. A change in the structure and function of government
4. The development of energy markets

The first reform involves a series of changes that alter the monopolistic structure of the energy industry to make it more competitive. Such changes include introducing new comers to share the market with the established predominant companies or the breaking down of any vertical and horizontal integration that eliminate potential competition. Secondly, ownership changes of energy companies obviously underline a transformation of the state-owned energy enterprises into individual or collectively owned companies. Thirdly, the governments are expected to undergo an internal structural and functional reformation that limits the over-involvement of the state in the private sector. Finally, with the above changes, the energy markets should develop toward a more liberalized future with increasing free market forces. According to Andrews-Speed, the Chinese energy market has performed some aspects of the above liberalization process; however, he argues that the system was not completely changed

because the reforms in China have not successfully regenerated free-market forces that are able to compete with the major monopolistic firms. The same arguments have been made about France's energy market even after the government's attempt to liberalize the industry. In order to evaluate those arguments and understand the evolution of the energy industry in terms of its competitiveness, this section intends to utilize those guidelines from the list to discover some potential patterns about the energy market reforms observed in the respective countries.

China

4.2 China's Oil Industry

Domestic oil shortage has always been one of the major obstacles for China's economic takeoff. During the pre-1980s, the Ministry of Petroleum controlled China's oil industry by carrying out oil production, transformation, and supply. Since 1982, the government switched to reformative policies through the means of attracting foreign participation and creating joint ventures with foreign companies. Although China achieved more production of coal and oil as the statistic numbers shown in Chapter 3, the economy was, in fact, on the verge of collapse by the mid-1970s since China had energy self-sufficiency but not energy security (Zha, p. 180). This situation emerged because the government evaluated energy resources like oil and coal as commodities that were mainly produced for the purpose of exportation.

When the 1970s energy shortages of domestic use aggravated in 1980s, the government realized that this would be an obstacle for economic development. Then, top leadership changed their economic strategy, which was manifested in Deng Xiaoping's initiation of the Chinese economic reform (1978). In 1975, Deng emphasized the urgency

of energy development in achieving rapid industrialization[27]. Accordingly, the sixth and seventh five-year plans (1981-1988) delineate the targets of increasing oil and coal explorations and productions for both exporting and domestic use. In 1982, the government officially opened the South China Sea to foreign participators (Smil, p. 170). At the same time, joint ventures emerged, but only at the exploration stage. The China National Offshore Oil Corporation (CNOOC) established several regional oil companies and more than ten jointly operated contracting service companies to provide assistances to foreigners who were interested in the field (Lee, p. 124). According to the PRC Year Book of 1988 to 1989, there were 54 offshore oil development contracts and agreements signed by CNOOC and foreign companies between 1980 and 1990[28]. In the mid-1980s, the government granted the permitted foreign companies to access ten southern provinces including Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Yunnan and Zhejiang for onshore oil exploration. During the same time frame, efforts were also made to decentralize the management of the sector. In 1988, the Ministry of Petroleum was transformed into the China National Petroleum Corporation (CNPC), which manage the upstream activities such as onshore oil exploration while China National Petrochemical Corporation (Sinopec) is established to take charge of the downstream activities including oil refining and distribution (Andrews-Speed, p.27 & Vedavalli, p.150).

From 1990s to 2011, the state again encountered several challenges in its energy security (Chapter 3). In 1993, China changed from a net-exporter to a net-importer and it

[27] Selections from PRC magazines, No. 926 (May 23, 1977), in Kent Morrison, "Domestic Politics and Industrialization in China: The Foreign Trade Factor." Asian Survey. Jul 1978. p. 694.
[28] PRC Year Book. "People's Republic of China Year Book 1988/89." Beijing: Xinhua Publishing House. 1989. p. 291.

has become much more dependent on the international market than before. This paper argues that there is one major motivation for China to further liberalize its oil industry in the new era. China's entry to the World Trade Organization (WTO) would impose pressure on the government to liberalize the market. Under the eighth, ninth and tenth five-year plans (1991- 2005), China's leadership accelerated energy sector reform while emphasizing the importance of energy conservation and diversification (Arruda and Li, p. 15). Among all reforms in the 1990s, the 1998 reform was the most important because it removed government functions from state companies. Following this 1998 reorganization, the Chinese government categorized most state-owned oil assets into CNPC and the Sinopec. As a result of reform, CNPC and the Sinopec became regionally focused. This means that CNPC and Sinopec changed into vertically integrated companies who control the oil sector in different regions. People's Daily reports that the motivation behind was to force domestic state-owned oil enterprises to improve their management and technological expertise so that they would be able to compete with their foreign counterparts (Dec 2000). Furthermore, the government also arranged to corporatize CNPC, Sinopec and CNOOC before its entry to the WTO. The energy enterprises are transformed into limited liability companies or joint-stock companies under this process of corporatization. Vedavalli demonstrates that all three largest government owned oil and gas companies have successfully carried out initial public offerings (IPOs) of stock between 2000 and 2001 (Vedavalli, p. 151). However, the Chinese government still holds the majority stakes in all of them and the foreign investors have no voice.

The "Giant" Three enjoyed their regional monopoly power except in the retail marketing of oil products where competition emerged. China opened a retail market of oil products in 2004 and all the restrictions on franchised operations were lifted. Meanwhile, wholesale market of oil products was deregulated in 2006. This competition in the downstream market is an indirect result of the WTO's tariff rate reductions rule. By accepting the tariff concessions, China and its trading partners' tariffs on crude, oil products and natural gas have reached the committed level. Therefore, foreign investors are motivated to enter China's domestic market because they can compete with state enterprises in the petroleum-retailing sector. According to People's Daily, foreign corporations like BP, Kostar, Shell, Exxon Mobil and Total have occupied 80% of high-end oil markets[29].

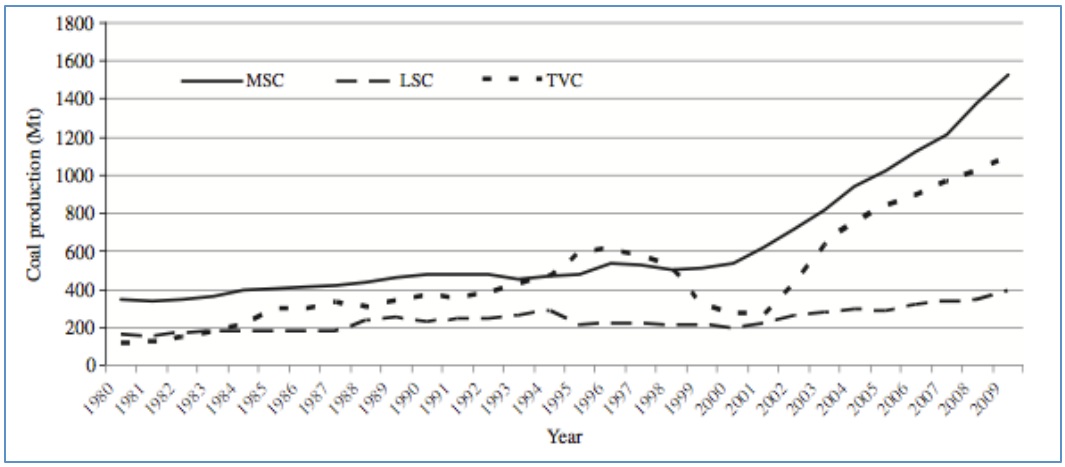
4.3 China's Coal Industry

The PRC leadership utilized a different approach in promoting coal production during 1980s to 1990s. After a series of redistributions of assets, coal industry became the most liberalized sector. In 1983, the State Council approved measures to encourage rural collectives and individuals to participate in the coal industry by granting them the licenses to run small-scale coal mines. After thirty-four years of SOEs' monopoly in the sector, now we have three categories of coal production entities. First, the Major State Coal mines (MSCs) are similar to a SOE where central government controls its practices through the Administration of National Agencies. Secondly, the mid-size Local State Coal mines (LSCs) function under the direction of the provincial, municipal or county governments. Finally, the small scaled Township and Village Coal mines (TVCs) are

[29] People's Daily. "The Competition between Domestic and Foreign Brands in the High-End Oil Markets." (润滑油市场中外品牌博弈高端). Nov 2007. http://news.xinhuanet.com/auto/2007-11/26/content_7144700.htm.

operated by townships, communes, collectives or individuals. Under the principle of "*state-owned, collectives and individuals all work together to develop large, medium, and small mines,*" the once restricted policy against the TVCs, now opens up the door and even provides financial incentives for privatization of coal mines (Shen et al, p. 276). As a direct result, the number of TVCs multiplied and the production of coal immediately increased. Fig. 4.1 illustrates the rapid growth of coal production in the TVCs as contrary to the other two larger types of coal mines. During 1995 to 1997, the amount of coal produced by TVCs even surpassed that of the MSCs. However, as soon as the TVCs reached this peak, the government launched a campaign from 1998 to 2002 to close tens of thousands of small mines across the country (Andrews-Speed et al, p. 39). As a direct

Fig. 4.1 Coal Production by mine type (1979-2009)



Source: China Coal Industry Yearbook (1982-2009)

result, TVCs' coal production dropped steeply. Though the numbers of small coal mines were affected by the closedown policy, Jianjun Tu points out that, at the end of 2009, the central government transferred all key state coal enterprises to the supervision of provincial governments, except for Shenhua Group and China Coal Energy Company

(Tu, p. 5). After 1998, the local governments control 95% of the coal mining companies. However, we should not overlook the influence of Shenhua Group, which inserts a monopoly power in the coal sector. According to Peng, Wuyuan, the company was established in 1995 and has maintained its vertical integration of production, transportation and sale. Therefore, both LSCs and TVCs pose little threat to its predominant position. In 2009, Shenhua Group produced more than 300 Mt coal while Peabody Energy Corp., the world's largest private-owned coal mining company only produced 172 Mt in the same year[30]. Nonetheless, during the period of 1990s to 2011, the government has continued the coal sector liberalization through the means of restructuring finance and pricing system, introducing newcomers and changing the ownership of MSCs (Table 4.1).

Table 4.1 Trend of coal institutions' evolution in China

	Applying central planning (1949-1978)	Introducing a market system (1979-1992)	Establishing a market system (1993-2009)
Administration	Hierarchy by central agency	Two-level system by central and local governments	Local governments after 1998 except Shenhua, China Coal and Yimin
Finance	State budget	State budget switching to state loan	State creditor switching to shareholder
Pricing	Regulated and under-priced	Two-track system	relaxed

Source: Peng, Wuyuan. "The Evolution of China's Coal Institutions." Program on Energy and Sustainable Development. Stanford. Aug 2009. p. 5.

Since China's access to WTO in 2001, the TVCs revived and their production of coal continued to increase speedily as shown in fig. 4.1. The impact of WTO on the coal sector is multifold. The most important consequence for the purpose of this paper is that

[30] U.S. EIA 2009.

China's participation in the WTO would smooth the coal market by eliminating uncompetitive coalmines. Since the provisions of the WTO require its members to clear state subsidies to enterprises, China's coal mines have to be more efficient and low-cost in order to compete in the international market (Shi and Xu, p. 12). In fig. 4.1, the illustration indicates that the coal sector has increased dramatically from 2001 to 2009. Together with more liberalized financial sector and relaxed pricing regulations, China's access to the WTO certainly promoted the scale of economy of its coal industry.

4.4 China's Electricity Industry

The Chinese government nationalized the electricity industry nationalized since 1949, the establishment date of PRC. During those days, the State Owned Enterprises (SOEs) fully controlled the industry assets under the administrative supervision of the Ministry of Electric Power Industry (MEPI) (Xu and Wenying, 2006). However, this system was not sufficient since the economic reforms that generated a much greater demand for power resources. Figure 4.2 shows that before 1980 the electricity of power production averaged about 1.077 and this indicates that China will at least 3.67 billion toe of final energy supply to sustain the economic growth rate (Bradley and Yang, p.2 and Yang and Yu, p. 737). Shi, Dazhen, the Minister of Power Industry of the PRC, indicates that the elasticity of electricity with respect to GDP should not exceed the threshold of 1.2, if China wants to prevent severe cases of power shortage (Shi, 1993a). In another speech, Shi emphasizes the need to reform the sector and stimulate the development by creating market economic mechanisms (Shi, 1993b).

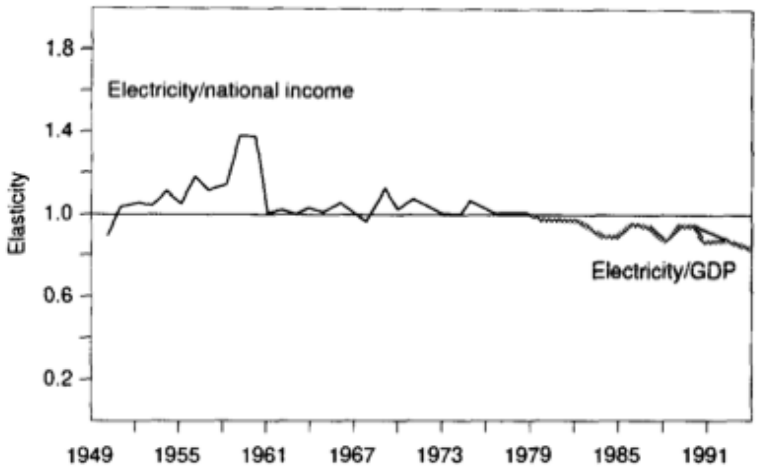


Fig. 4.2 Elasticity of electricity with respect to national income and GDP (Yang and Yu, p. 737)

Therefore, the government launched a three-phased reform[31] in the sector starting in the 1980s. During the first phase (1986-1996), the government intended to raise capital and funds to finance electric power generation projects. The instruments including the permission of foreign investments in power generation sector and the breaking of the monopoly system in 1995, are similar to those adopted in other energy sectors such as coal and oil. In 1994, the Ministry of Energy established 30 provincial power companies, and formed six power groups from 21 of the 30 provincial power companies. From 1980 to 1994, China had achieved a net increase of power supply of 628 TWh (Yang and Yu, p. 741). There were 64 large and medium sized power projects, which amounted to 40.7 GW power generation and required $26.6 billion investments (SETC, 1994). According to State Economic and Trade Committee, 43 out of 64 projects were financed by foreign investments. During the second stage (1997-2001), the government's plan of separating administration from enterprise operation was gradually realized and created systematic

[31] The three-phased reform was described by H.W. Ngan in his "Electricity regulation and electricity market reforms in China." Energy Policy 38. P.2142-2148. 2010. The contents regarding sector liberalization are presented in this paper.

conditions for the operation of the power industry. Chen and Yang illustrated that the reform strategy involved corporate restructuring, which transformed the SOEs into companies with combined public ownership. Then, those companies were required to perform commercialized operations under the market economic system. Furthermore, power generation companies were listed on overseas stock exchange markets (Chen and Yang, p. 63). The third phase reform (2002-2009) aimed to introduce competition by separating Generation from Grid and forming fair competition in the power market. Following the adoption of the Electric Power Law[32] in 1996, the State Council of PRC again emphasized the government's plan to empower private sectors by promoting liberalization. In 2002, the State Council provided guidelines for power industry reform and stated,

> "In accordance with the spirit of 15th CPC congress and the fifth session of 15th plenary conference of CPC…[the goals are to] *give full play to its basic function to allocate resource based upon market- oriented system*, *speed up the establishment of modern enterprise system*, promote the transforming of internal operational regime for power industry and set up the power sector structure which is in line with *socialist market economy*[33]."

The guidelines clearly delineated that the goals of the central government were to create market system in the electricity industry. In response to this policy, five companies were established and they have an equal share of the generating assets of State Power. On the transmission front, State Grid Corporation of China split into two entities that manage the grids in different regions of China (Xu and Chen, p.2462). The entry of China to the WTO did not affect the country's power companies in the short term. However, Shi and

[32] This law includes several sets of administrative regulations: "Regulations on Management of Electricity Price" and 40 sets of sectorial rules, such as the "Procedures for Examining and Approving Foreign Investment in the Power Industry", "Methods Against Unfair Competition in Power Engineering." (Cheng and Yang, p. 64)

[33] Translated from the *Scheme of the Reform for Power Industry*.

Xu asserted that WTO would expedite the opening of the power generation market in the long run since the positive effects of WTO on other economic sectors of China would raise the demand for electric power (Shi and Xu, p. 16).

France

Similar to the Chinese case, the French economy has experienced a tradition of governmental interference as the Prime Minister Mauroy in 1981 proclaimed that, "nationalizations are one of the facets of French genius" (Jacquillat, p. 2). As a result of the nationalization program, industries of energy, tobacco, railroads, telecommunications and the mails constituted the largest French public sector included *grande entreprises nationales* that formed quasi monopoly in the energy industry since 1970s. In 1985, there existed no more private companies in the respective sector (Jacquillat, p. 7). The French nationalization and complete state investment were the government's responses to the previous economic recession and energy crisis in the 1970s. Meanwhile, China intended to stimulate economic performance by attracting foreign investment and gradually adopting market mechanisms. Moving towards the 20th century, the French energy market was forced to open under the EU directives (Chapter 2). Though France has been a number of the supranational entity in the Europe since the establishment of the European Coal and Steel Community since 1952, the French government has not always carried out the rules made at the higher level. Since 2006, the French government showed its support for the creation of a EU common energy market as the Prime Minister Dominique de Villepin stated that, "the only long-term answer is to create a great

European energy market[34]." The evolution of four main energy sectors will be analyzed in this section: oil, electricity, natural gas, and nuclear power.

4.5 France's Oil Industry

France is a country that has scarce petroleum proved reserves and this situation was an Achilles tendon for the government during WWI when French force could not even mobilize and they were entirely relied on U.S. and Great Britain for their oil supply[35]. At the end of the war, energy security became a top priority on the government's agenda because of rapid growth of transportation, aviation and other industrial sectors. Then, they decided to change the predicament and they created a national campaign to ensure that France would have its own supply of oil. Out of its policies to pursue independent energy security, the incumbent French government established National Oil Company, named Corps Des Mines (CDM). CDM was an elite French Administrative of Corps that dominated the oil industry around 1920s[36]. Then, Compagine Française des Pétroles (CFP) was created, which became TOTAL later on. By serving as a policy instrument, CFP successfully helped to extend the power of state in the industry, and thus brought "France to the level of the Anglo-Dutch and American trusts dominating the market at the time" (Sassi, p. 3). After WWII, Elf Aquitaine (Elf) was created in 1941 as a state own and state run enterprise and its objective was to get strategic oil for France. With these three major oil national companies in France, more

[34] Kubosova, Lucia. "De Villepin calls for new EU energy tsar." Euobserver.com. 2006. http://euobserver.com/political/22491.

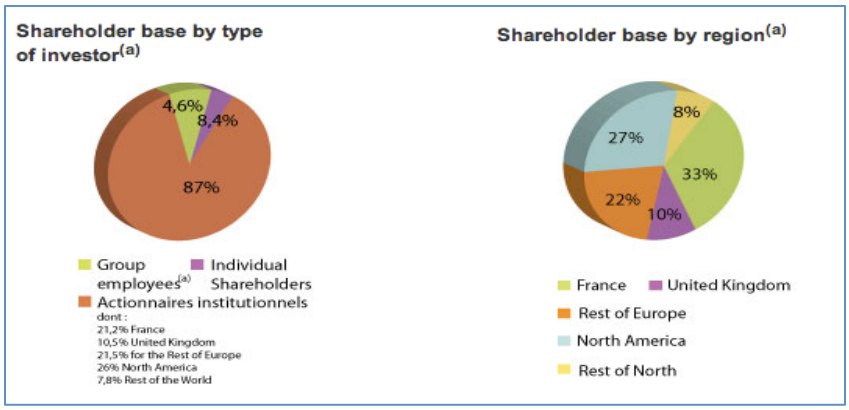
[35] Nayberg, Roberto. "qu'est-ce qu'un producit stratégique? L'exemple du pétrole en France 1914-1918." www.stratisc.org.

[36] This information is extracted from an interview with Professor Douglas Yates, Professor of Polictical Science at The American University of Paris, about his book "The French Oil Industry and the Corps Des Mines in Africa." The interview was conducted and broadcasted by France24 Television Channel. February 2009.

oil reserves were detected from 1980 to 1986 and oil production and importation constitutes 66% of total primary energy supply for France in 1973 (EIA and Chapter 3).

During the 1990s, CDM was combined with le Corps des telecommunications and then, disappeared from the oil sector. Meanwhile, the French government initiated a privatization schemes to both Elf and CPF (TOTAL) in 1980s and sold shares to the general public. In the 1990s, the government interests in Elf and TOTAL are 10% and 5%. Though foreign interests have increased their ownership at the same time, the government's interest and the ownership interests of some large French institutions still maintain the stable and undiluted ownership of the enterprises[37]. Until most recently, the shareholder base of TOTAL is greatly diversified (fig.4.3).

Fig.4.3 Shareholder Base of TOTAL (2011)



Source: www.total.com

Since most European countries have already liberalized their oil industry prior to the EU's initiation of an energy policy, little evidence shows that the EU concerned about the energy markets in its member states. In fact, reports about French oil industry

[37] TOTAL. *1995 Fact Book*. p.21 and Elf Aquitaine. *1995 Annual Report*. p.3.

demonstrate that retail oil markets in France highlighted three major companies, that are TOTAL, Intermarche and Carrefoure, constitutes 56% of the market. Meanwhile, the refining sector has undergone a high degree of consolidation between 1996 and 2008 because Shell and BP exited the market while Total merged with Fina in 1999 and with Elf in 2000[38].

Unlike its electricity and natural gas sector, all these firms transformed from state instruments into normal multinationals before EU initiatives. It is important to pinpoint that they transformed from SOEs into private companies, or from private companies under the control of the government into the ones that answer to shareholders. In either case, it was the French government's intention to achieve its energy security, which is the basis for economic prosperity. Though France upheld its prolonged believes of nationalization and its oil industry policy proved to be effective in procuring energy independence, the decision to liberalize the sector was made after the national enterprises have grown into competitive size and gained capability to confront foreign companies. Furthermore, any anticompetitive conducts are under the scrutiny of the European Commission under EC Treaty competition rules[39].

4.6 France's Electricity and Natural Gas Industry

Since the end of WWII, the French authorities granted a state monopoly to Electricité de France (EDF) and Gaz de France (GDF, today GDF Suez) in the field of production, transportation and distribution of electricity and gas in order to manage the

[38] Survey Of the Competitive Aspects of Oil and Oil Product Markets in the EU. A report to Directorate-General Energy and Transport of the European Commission. Econ Pöyry. Dec 2009. p. 9 and p. 122.

[39] Though France has not yet faced problems with the merger control power of the EU, many other countries, such as Spain and Malta were forced to open their energy sector for competition (ec.europa.eu/competition/sectors/energy/oil/oil_en.html).

restoration of infrastructures and networks[40]. The newly created EDF and GDF were run by a technical elite of graduates of the grandes écoles, with a high degree of independence (Hadjilambrinos, 2000).

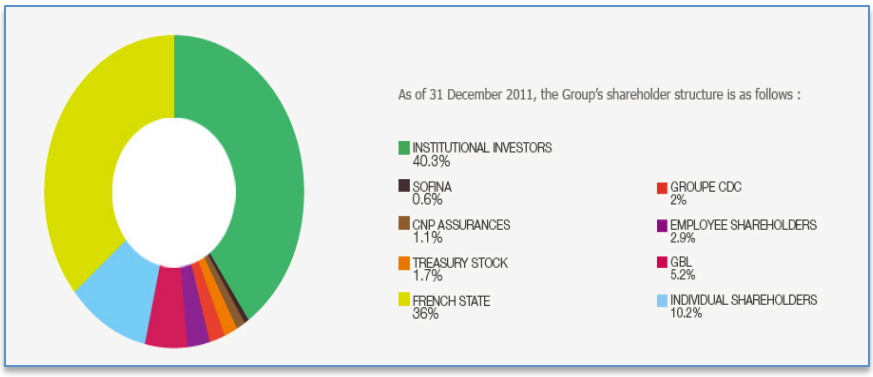
During the 1980s and 1990s, EDF did not liberalize like the companies in the oil sector did because the government launched a state dominant program to develop nuclear energy and intended to make it the most dominant energy resource for the French domestic market[41]. Evidence shows that this trend of EDF monopoly continued into 2000s. In 2006, EDF worked an installed capacity of 98.19 GW, or 84.6% of national capacity, of which 63.13 GW (100%) are nuclear, 20.44 GW (81%) hydro and 14.62GW (53%) fossil-fired (EDF 2007b). During the same year, the generation of electricity was 490.80 TWh of which 428.10 TWh were nuclear, 21.10 TWh fossil-fired and 41.60 TWh hydro (EDF 2007b). In fact, there are three companies who can supply both gas and electricity (EDF, GDF and Poweo, the largest of the smaller groups) while seven companies owned by both foreign and French energy companies can only supply electricity and one can supply only gas-Altergaz, whose main shareholder is Italian ENI group (de Saint Jacob, p. 59).

Evolutions also took place in the company structure of EDF and GDF. In 2005, more than 20% of its shares were sold to the general public. After the offering, the state still holds a majority of 78% of the company (IFLR). In the case of GDF, the shareholder structure has also diversified (fig.4.4). In Aug 2011, China investment Corp paid €2.3

[40] Law No. 46-628 of 8 April 1946 concerning the nationalization of electricity and gas, but it was later repealed by the Law No. 2004-803 of Aug 2004.
[41] As Chapter 3 shows, the share of nuclear energy in the total primary energy supply by 2010 exceeds that of oil and natural gas.

billion for a 30% interest in GDF Suez's exploration and production business according to Wall Street Journal[42]. According to Commission de Régulation de L'Énergie, there

Fig 4.4 Breakdown of GDF Suez's Share Capital at Year-End 2011.



Source: www.gdfsuez.com

were 17 alternative electricity providers operating at the end of 2007 (CRE, 2007b). The result of liberalization in the two major sector monopolies was a direct result of the EU commands. During the 1990s, the European Commission was specifically concerned about the fact that many member states protect the monopoly position of their national energy enterprises in the electricity and gas market. With the implementation of two EU directives issued in 1996, 1998 and 2003 into its national law of 2000-108, Law No. 2004-803 and Law No. 2006-1537[43], the French government opened its internal electricity and gas market to competition.

[42] Colchester, Max. "China Closes In on European Gas." WSJ.com. Aug 2011.

[43] Law No. 2000-108 of Feb 2000 concerning the modernization and the development of the electricity public service, transposing Directive 96/92/EC of 1996 concerning common rules for the internal market in electricity; Law No. 2003-8 of 2003 concerning the electricity and gas markets and the public service of energy, transposing Directive 98/30/EC of 1998 concerning common rules for the internal market in natural gas. Law No. 2004-803 concerning the electricity and gas public service and the electricity and gas companies, transposing Directive 2003/54/EC and Directive 2003/55/EC.

France has chosen a gradual and controlled opening to allow the system to adapt. Thus, the perimeter of eligible customers, who can freely switch suppliers, has gradually broadened over a span of several years (CRE, 2007 a, b and Gazprom):

1. In 2000, 30% of the market with annual demand ≥ 16 GWh was allowed to select their supplier. Liberalization of the gas market for sites consuming more than 237 GWh/y (±20% of the market is open).

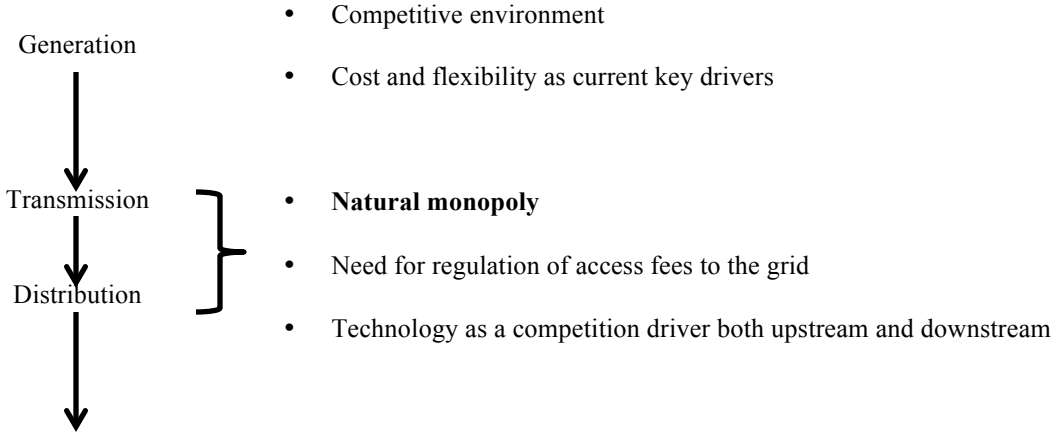
2. In 2003, 34% of customers with annual demand ≥ 7 GWh were allowed. Liberalization for demand ≥ 83GWh/y (±37% of the market is open).

3. In 2004, all non-household customers were included, which doubled in size to 70% of total demand. Liberalization for the professional clients in gas market (±70% of the market is open).

4. In 2007, free electricity market access was granted to all customers. Total liberalization of the gas market.

Therefore, under the pressure of the EU decrees, the electricity and the natural gas sectors were mainly liberalized in their production and supply, however, transport or transmission and distribution facilities remain in public hands, with no competition (exhibit 4.1). Though the oil sector liberalized before the adaption of the EU energy laws, but it was still under the pressure of the EU anti-competition clauses.

Exhibit 1: The electricity Supply Chain in France



Sale	• Competitive environment, and price as key driver
↓	
Services	• Competitive environment • Price, quality and bundling capabilities as key drivers

Source: Strauss-Kahn, Vanessa and Traca, Daniel (2004).

Conclusion

With a close look at China's energy industry's development, this chapter reaffirms Andrews-Speed's observation about the different degree of liberalization that took place in the major sectors: coal industry constitutes the most liberalized sector while oil industry remains the least privatized and the electricity industry locates somewhere in the middle (Andrews-Speed, p.27). However, unlike Andrews-Speed and others, this chapter does not stop here but further explores the impacts of China's entry into the WTO towards the liberalization process in the energy industry. It argues that a sector like oil that has been traditionally under the control of the government, has achieved more liberalization characters because of the WTO. Meanwhile, other sectors like coal and electricity might be already liberalized to some degree before, but the reforms will be reinforced as a direct or indirect result of China's access to WTO. Though evidences show that China's energy market has achieved some liberalization measures, the Chinese model is far less liberalized than the French model because a large portion of the energy industry still remains under the control of the government.

On the other side, France's oil sector was liberalized since the 1980s and 1990s after the national energy enterprises gained capabilities to compete with other international companies in the fields of oil exploration and supply. According to recent

observations, the market share of three largest French oil companies does not constitute a monopoly abuse in the market. The reason is that the presence of other predominate international oil companies have never left the French market. However, evidences show that major competitive foreign companies may quit the French market because they could not compete with the local companies. The emergence of this situation is related to the government's intervention about the oil price in the sector. Meanwhile, the electricity and natural gas sectors have always been in the hands of the government until the 1990s EU directives. However, President Nicolas Sarkozy's preference of making EDF as the "lead company" in France triggers the concerns from many including GDF about the re-appearance of the "traditional centralizing instincts" of the government (de Saint Jacob). In order to explain the influential role of the state in both France's and China's energy industry, the next chapter will examine the energy price and its impacts over the relationship between the public sector and free market forces.

Chapter 5. Balance between Consumer and Energy Interests

Evidence in Chapter 3 and 4 indicates that the energy industries of China and France have been liberalized under the pressure of achieving energy security, economic growth and their entries to international organizations. By liberalizing the energy industry, the government encouraged the spread of private sector while limited the public sector. However, this does not suggest that the government completely leave the market to the free market forces. In fact, the governments still involve in some crucial sectors that may affect the performance of the entire market. The goal of this chapter is to explore the interventionist aspect of the energy policy. By measuring the evolution of consumer and energy interests, the author aims to answer the question of "How have the policies affected the balance between consumer and energy interests?" As a result, this chapter discovers that providing public service and ensuring the power of large energy companies are the two major goals of the governments whenever they decide to make changes in the energy market.

China

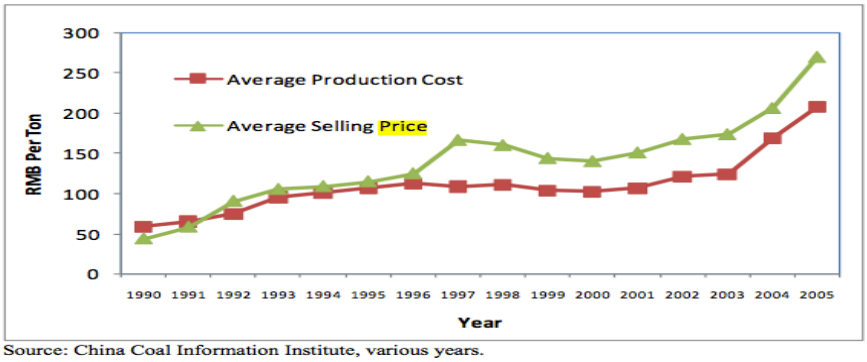
5.1 China's coal and electricity industry

Being the most important energy industry in China, Chapter 4 demonstrates how the coal sector had liberalized during the 1980s and 1990s. Under the general direction of the 7th five-year plan (1986-1990s), the central government also implemented a price reform which dictated that production output above assigned quotas could be sold at higher prices. However, the price for the required coal were tightly regulated and set very low by the central government to stimulate the downstream activities, such as electricity generation and prevent inflation (Peng, p.9). Mingli Zhang's research indicated that there

were only four nationwide increase in average state mine producer prices in 1958, 1965, 1979 and 1985. The selling price was raised by only 2 to 3 yuan per ton during each year, and this adjusted price obviously would not alleviate the financial stress over the enterprises (Zhang, 1989). Therefore, during this period, the coalmines were selling very cheap coal products at their own loss.

Since the State-Owned Coal Enterprises were burdened by heavy debts after the government retrieved its financial subsidies from the sector, the Fourteenth Central Committee of the Chinese Communist Party in 1992 decided that China should work towards becoming a "socialist market economy" (Wu, 2005). Therefore, the coal price for Major State Coalmines was liberalized in 1993, except the coal for power generation and agricultural use, which still remains low (Peng, p. 21). Within the next decade, the sales prices for coal was no longer in the hands of the government, and there was a sharp rise in the price of coal which is now in proportion to the cost of production (fig. 5.1). As figure 5.1 illustrates that the price of coal finally exceeds the cost and has gradually increased since the 1990s price reform. The intention of this partial price reform is self-evident. There were two main goals behind. The first goal was to support the State Coal Companies with their debts. The second goal was to ensure that the production coal were under the control of tight price regulation.

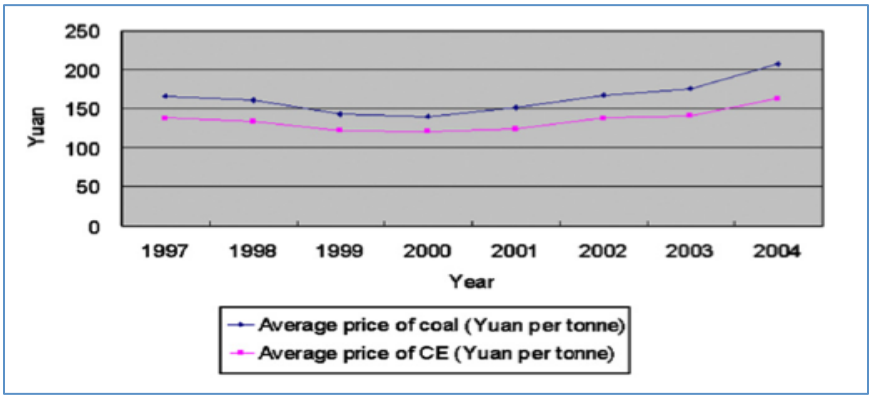
Fig. 5.1 Average Production Cost and Selling Price of Major State Coalmines



Source: China Coal Information Institute, various years.

This system only solved the problem to some degree, but it actually triggered more problem than before. According to Chapter 4, we know that the electricity generation sector has been gradually liberalized since 1985; however, scholars notice that the government has controlled electricity prices tightly from 1985 to 2000s. The conflict between the two has worsened as the market price of coal sold to electricity (CE) has increased because power generation has been one of sectors that consume greatest amount of coal (Wang, p. 4959). Meanwhile, residential consumption of coal has decreased twice amount of coal in 2010 than in 1995 (Department of Energy Statistics). In 1991, the average electricity tariff level in the East China Power Group was 0.156 yuan/kWh (Zhao, 1991). However, Yang indicated that this level was below the long-run marginal cost which should have been 0.204-0.34 yuan/kWh in 1991, or 136% -226% more than the actual price level (Yang, 1995). This situation created a gridlock for the coal companies and power generation companies because the downstream firms could not afford to purchase high and floating coal price (fig. 5.2).

Fig. 5.2 Price gap between coal and CE from main state-owned mines.



Source: Wang (2005, p.41).

As a result, fewer contracts were signed between the two sectors. The conflict of "market coal" (市场煤) and "planned electricity" (计划电) has been worsened when China experienced a period of unexpected increased power demand in the 2000 (Zhang, p. 630). Half of China's provinces suffered electricity shortage (Kynge, 2004). In 2003, the government intervened in the coal sector and aimed at solving serious power shortages. The National Development and Reform Commission (NDRC) forcefully increased the price for other types of coal in order to compensate the coal companies for supplying lower priced coal to the electricity industry (Wang, p. 4963). The Chinese government also searched other methods to solve the problem of power shortage. In 2009, NDRC announced a rise in the price for non-residential use by 2.8 fen per kilowatt hour on average nationwide[44]. This evidence is in line with Andrew-Speed's observation over the electricity industry in China. He argues that, "a large proportion of power users, especially house-holds and state enterprises, are paying low tariffs and are being subsidized by industrial and commercial enterprises which are paying very high tariffs for power supply" (Andrews-Speed, p. 339-340).

However, this situation has changed when the government finally elevated the price for residential consumption in 2012 when power brownouts increased as economy has grown rapidly[45]. According to the news report, the China Electricity Council recently admitted that the electricity prices have been too low comparing to other sectors. Counting the inflation, China's electricity prices doubled over the past three decades, but people's income also increased greatly. For more than two decades, the government did

[44]. Xinhua. "China raises price of electricity for non-residential use." Nov 2009. www.chinaview.cn

[45] CaixinOnline. "Electricity Prices Too Low, Industry Council Says." www.english.caixin.com. March 2012.

not think of raising the prices for household users. After comparing the ability of individuals' ability to pay their electricity bills, the government decided to raise the electricity prices so that power shortages would be prevented. Even though critics have pointed out that the problem remains in the lack of market mechanism of the industry, but the government does not seem to liberalize the pricing mechanism in the retail sector.

5.2 China's oil and natural gas industry

Like the electricity price, natural gas, oil and oil products prices have been under government control in China. In the case of oil prices, the expanding imports have pushed domestic prices closer to international market prices since China became a net oil importer in 1993. However, the government has exercised its power to keep the price at a relatively lower level than the international price for more than a decade. The manager of Sinopec explained that for every ton of gasoline produced by Sinopec in 2008, the company has countered a deficit of ¥2162, and every ton of diesel fuel production caused ¥3000 loss[46]. Evidence shows that this same phenomenon also happened to PetroChina Company Limited. According to the financial report of PetroChina and Sinopec, in 2008, the former experienced a deficit of 13.52% while the latter lost 11.98%[47]. In the case of natural gas, the price remained relatively lower than that of coal and the international market because the government intended to promote the use of natural gas. However, Nobuyuki Higashi indicated that the imports of liquefied natural gas since 2006 has raised the price for natural gas (p. 24).

France

[46] People.com.cn. "Why China's oil price is higher than that of U.S.?" (油价上涨六问油价，中国油价为何比美国贵?" March 2011.
[47] http://stock.hexun.com/2008-08-28/108432793.html. Aug 2008.

The French government had expressed its concern about the negative impacts of EU's liberalization policy aiming to create a common energy market. The argument often used by the opposition emphasized that the EU's directives would erode domestic notions of public service. Though critics contended that the real reason behind France's delayed implementation of EU energy policy was that the Commission would disrupt state's well-established organization, regulation, and funding schemes for gas and electricity supply (Soriano, p. 1). Soriano's observation certainly indicates that the government has fear for making changes in their established system; however, the claim that the French opposition made about public service is also valid in some degree. Ensuring public service has been one of the major objectives in French laws[48].

5.3 France's electricity industry

Due to the low cost of nuclear power and efficient hydraulic power, the electricity prices for French consumers are on average 25-35% lower than the average prices of other European countries, for both households and business. Though the electricity sector was liberalized under the pressure of the EU command, the government still has its influence over the regulated tariffs. In fact, the French government adopted a dual price system. EDF provides two types of tariff, "Tarif Bleu" and "Mon Contrat Electricité[49]," for consumers to choose based on their own needs. The "Tarif Bleu" includes the prices that are set by the authorities. Prices for households excluding taxes have increased by

[48] The provisions about public service of electricity and gas can be found in Act No. 46-628 of April 8, 1946; Ordiance 86-1243 1986; Act n°2000-108 of February 10, 2000; Decree No. 2001-365 of April 26, 2001; Act No. 2003-8 of 3 January 2003; Decree No. 2004-90 of January 28, 2004; Act No. 2004-803 of August 9, 2004; Decree No. 2005-123 of 14 February 2005; Act No. 2005-781 of 13 July 2005; Decree No. 2005-1750 of 30 December 2005; Order of August 10, 2006; Order of August 12, 2008; Order of 13 August 2009; Decree of August 12, 2010; and Decree of 4 January 2012. www.legifrance.gouv.fr.

[49] Information about "Tarif Bleu" and "Mon Contrat Electricité" could be found on the webpage of EDF. http://facture.edf.com.

1.1% in 2007, 2.0% in 2008, 1.9% in 2009 and 3.0% in 2010. The average prices excluding taxes have evolved from 1.2% in 2007, 3.6% in 2008 and 2.3% in 2009. The difference among the numbers is filled by the increase that occurred for small business consumers and medium and large consumers[50]. Secondly, "Mon Contrat Electricité" is the price set by EDF freely. By comparing the two, the author found that "Tarif Bleu" is more suitable for small household and business users because it provides more options and plans. For example, "Option Tempo" states that it could be cheaper for customers if they use electricity on days with low demand.

There are no evident documents or data indicating that EDF suffered from financial loss due to the low prices regulated by the government. However, a recent news report in 2010 indicates that EDF made about 50% of its profits outside of France in 2009 and, in 2010, this share increased to 60%. The report further suggests that increasing costs is the main reason why EDF cannot make considerable amount of profits in France (Giulia, 2010). The NOME law requires that the coalmines to sell 20%-25% of its production to its competitors, traders and distributors at a price regulated and fixed by a regulatory body. Like the coalmines, EDF is also required to sell nuclear power to its competitors at a price that may vary between 38€/MWh (CRE) and 42€/MWh (EDF). In the face of more competition after the implementation of the NOME law, EDF encounters the problem of infrastructure maintenance and environment preservation as well. Therefore, EDF could not make profits if the consumers still enjoy low power

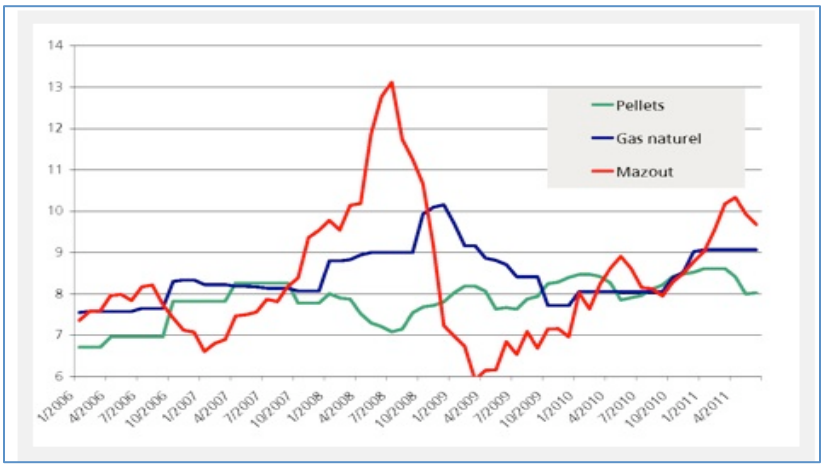
[50] Ministère de L' Écologie, du Développement Durable Et de L'Énergie. "Tariff movement of Summer 2010." www.developpement-durable.gouv.fr. Aug 2010.

prices. The French government is currently drafting new price laws to adjust this situation in the favor of EDF[51].

5.4 France's natural gas industry

Like that of the electricity industry, the price of natural gas in France is regulated by the government agencies. However, unlike the electricity sector, the gas sector requires more government intervention since France does not produce a large amount of natural gas. While gas prices have increased 33% over the past five years, France is still facing a challenge to fight against energy poverty, which currently affects 8 million people (fig. 5.3).

Fig.5.3 Evolution of final prices of energy by kWh



Sources: www.ecowizz.net

Due to the high increase of gas price over a long period of time, the government intervened in the market since 2009 and finally decided to impose a freeze on gas price in 2011. According to Bloomberg, the government implemented a cap price of 2% in natural gas, which is far below the 7% that GDF Suez SA proposed necessary to cover

[51] Bloomberg forecasts that French Power Prices may rise 30% by 2016. http://www.bloomberg.com/news/2012-01-17/french-power-prices-may-rise-30-by-2016-energy-regulator-says.html.

supply costs (Patel, 2012). In fact, GDF Suez accused that this price freeze resulted in a shortfall of €290 million. Though the government owns 36% of the company, the enterprise sued the government. Conseil d'Etat states that, "[there are] serious doubts on the legality of the contested decision…[no clause] allows ministers to suspend the application of the tariff formula laid the decree" and thus it ruled that the freeze is "not compatible" with an open market, and more particularly it contradicts the Energy Act of 2005, which guarantees competitive energy prices (Smith and Patel, 2011).

Conclusion

From the above analysis, we can conclude that the energy industry of China and France share several features. First, the governments control the price tightly though the market may be completely or partially liberalized. Secondly, the governments adjust the balance between the consumer and industry interests by exercising its power of price control. The motivation for both governments is to provide public service to their citizens by ensuring affordable prices, especially in the case of France, where relating clauses are written in domestic energy laws. When protecting the benefits of people, the governments are willing to sacrifice the profits of large energy companies. However, the loss has become too profound, the central leaderships would consider raise the price in order to help the companies to meet their costs. By doing so, the government balance the interests between the consumers and the energy industry.

Chapter 6. Conclusion

So far, we have discussed the energy industry in China and France in a great depth. Chapter 3 identifies the energy types that are used by the respective governments and why they are chosen. The Results show that the ultimate policy priority for a nation is to achieve energy security. With secure supply of energy, the government then could provide energy for residential, commercial and industrial use. As a direct result, economy would also grow.

Another important discovery is that the countries' energy policy moved from self-sufficiency to a strategy that combines both energy independence and importation. During the aftermath of the energy crises, the governments intend to secure energy supply by diversifying its energy profile, however, domestic energy production is very limited since the costs of energy development is enormous. The preferred solution for the leadership is energy importation. The purpose of this chapter is to find the most important parts of energy policy since policy constitutes tens of thousands of regulations, rules and orders over a long period of time. Due to the limitation of this paper, it is not possible to examine each one. The author believes that there is one main goal for the government in conducting their sets of policies. With this goal of achieving energy security in mind, then we can refer to it when discussing the government's choices made between the public and private sectors.

Chapter 4 illustrates the liberalization process that took place in China and France from the pre-1980s to 2011. After explaining the historical developments of respective energy sectors in China and France, the chapter discovered a phenomenon where some sectors are more liberalized than others. In China, oil industry is the least liberalized than

coal and electricity sector. Though there are still differences among the levels of liberalization in respective sectors, one should credit that reason for the oil industry to liberalize rests with the influence of foreign participation in the sector and China's entry to WTO. In order to create international competitive energy corporation and attract foreign investment, the government encouraged creations of joint ventures and separated the role of government from the function of the major companies. Chapter 3 also proves that coal and electricity industries became more liberalized since China joined the WTO.

On the other side, French oil industry is the earliest one to liberalize, but it was only possible after the national oil company became capable of competing in the international market. Furthermore, foreign suppliers already exist in the domestic market and obtained predominant position. Nonetheless, France is similar to China in the way of how the international organization pushed the domestic markets to liberalize. Though France delayed its implementation of the EU common energy policy, it finally transposed the supranational policies into the national laws.

As a result, the natural gas and electricity industries were liberalized. Recalling the ultimate goal of the nations' energy policy, we can conclude that international organizations like WTO and EU can impact domestic market because the states want to secure their energy supply. Only by adapting the energy industry to the rules of those supranational organizations, the state could benefit more in the long term.

Chapter 3 and 4 help us to understand that the government would prefer free market forces when its goal is to achieve energy security for the purpose of economic development. However, the author believes that when energy security becomes the means for other purposes, the government would choose the other side, that is the public sector

by inserting interventionist policies. Chapter 5 explains how the governments use instruments such as pricing mechanism to balance consumer and industry interests. In the case of China and France, the governments have implemented the policy of low energy prices for residential consumers for many years. However, sectorial restructure and liberalization process have lifted the price for some sectors. It is foreseeable that this chain effect would eventually impair consumer interests.

Recent cases explained in Chapter 5 explained that the government will not only favor the consumer interests, but it would also consider the needs of national energy companies. If they were on the verge of collapsing, then the government would choose to raise the price to help them meet the needs. It was only made after the government assess the ability of the consumers to pay such high prices. Therefore, when the government identifies the goal of energy security for the purpose of public service, the government would implement policies that restrict the private sectors.

In conclusion, this paper identifies two conditions that a government would prefer one sector to the other. When a government recognizes that energy security is needed for economic growth, the state leadership would reconcile the "public" bias of the energy policy and stimulate liberalization process and emergence of free market forces in the energy industry. In the other case, if a government believes that energy security is threatened because it cannot be provided to the citizens as public service, then the state would restrict the performance of the private sectors by inserting its leveraging mechanisms.

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