CHAPTER SEVEN

Energy: The "Achilles' Heel" of China?

Since the late 1990s, with the substantial increase of China's energy consumption and imports, concerning China's energy security, some ideas that "Energy is the Achilles' heel for the rising China," "Dependence on energy imports is China's fatal weakness," and "China's energy is not secure" have been widely accepted. Even some analysts said the energy issue is a "sword of Damocles above our head." A lot of people hold similar views that the energy issue is the fatal weakness for the rising China, the shortage of energy and other resources has become the disadvantage for China's economic and social development, and that the issue of energy and other resources has become the biggest risk to China's development.

The views mentioned above have greatly exaggerated the problems and risks China is facing regarding energy security. To some extent, this has resulted in some degree of excessiveness and deviation about the stress on energy security and the support for "going out" of energy enterprises, and to a large extent contributed to the spread of "China's Energy Threat Theory" as well as the energy-related disagreements and frictions between China and other countries. To our delight, with the gradual deepening of people's understanding of the energy situation, more and more people are beginning to hold more rational and objective views on China's energy challenge, and China's energy policies are becoming increasingly mature.

ENERGY IMPORT: A DISADVANTAGE OF CHINA?

The main concern about China's energy problems stems from the strong increase in energy demand as the economy develops. Under such circumstances, the unproportional potential of domestic energy production will lead to an increase in energy imports and a significant increase in dependence on foreign energy. Some analysts have pointed out that China's oil will be exhausted and the oil crisis is approaching China. In

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2011, China's dependence on foreign oil exceeded 55%, and expected to reach 75% by 2020, and the domestic oil will be exhausted in 25 years. Accessing energy has become the overriding priority of this century [1]. Xu Shoubo, an academician in Chinese Academy of Engineering, said that if a country wanted to keep oil supplies safe, by no means should the net oil import exceed 50%. Exceeding 50% means unsafe oil supply. Theoretically, it should be controlled within 30%. However, according to China's oil import rate, the top limit for China's net import rate of oil was predicted to reach 59.7% by 2020, so energy crisis may break out at any moment.

China's crude and refined oil trade (1995–2016)

Billion dollars	1995	2000	2005	2010	2014	2015	2016	Growth rate 2016
Crude oil								
Import	4.64	14.86	47.86	135.31	228.14	134.15	115.31	− 14.05%
Share[a]	2.8%	6.60%	6.28%	9.59%	11.64%	1.28%	7.26%	
Export	0.75	2.12	2.70	1.64	0.49	1.55	0.94	− 38.96%
Share[b]	0.38%	0.85%	0.41%	0.11%	0.03%	0.01%	0.04%	
Refined oil								
Import	2.70	3.66	10.44	22.47	23.37	14.35	11.15	− 22.53%
Share[a]	1.63%	1.62%	1.37%	1.59%	1.00%	0.14%	0.70%	
Export	1.10	2.11	6.41	17.03	25.40	19.10	19.37	− 1.43%
Share[b]	0.56%	0.85%	0.91%	1.10%	1.08%	0.14%	0.92%	

[a]On total import.
[b]On total export.
Source: China's oil imports and exports in 2016. Int. Petrol. Econ., 2017, 15.

Yang Guang, the director of Institute of West-Asian and African Studies of the Chinese Academy of Social Sciences, has pointed out that oil is a big problem in China. It is "big" because of the following three reasons. First, oil is very important. It is not only the lifeblood of China's economy but also has a close bearing on people's daily life. Second, oil is limited and unrenewable primary energy. The more you exploit and use, the less there will be, and one day it will be totally exhausted. (It is said that the current oil can only be used for 170 years and after 170 years, our descendants will live a life and develop economy without oil.) The last but not the least, due to geological reasons, the flowing black wealth under the thin crust is not evenly distributed. China's oil is unlikely to be self-reliant. Therefore, we must rely on world oil supply. We must use fruits of our labor in exchange for others' underground oil [2]. Considering China's current energy and environmental conditions, all

kinds of forecasts show that China's future would be glutted with energy insecurity, environmental unsustainability, more and more serious pollution, and increasing impact on global climate change. China is facing the world's most severe energy and environmental challenges in history [3].

Richard Watson believes water may be the fatal weakness for China's development. At present, among China's 600 big cities, 400 suffer from the insufficiency of water, and China's water resources per capita are lower than that of the world average. All these are likely to keep China from developing in line with its existing model [4]. On July 12, 2011, the article "Water Challenges Asia's Rising Powers" by Keith Schneider was published by the online magazine *YaleGlobal Online*, where he wrote that water shortage could affect food production and therefore hinder China's pace of development. Also, conflicts resulting from water shortage could disrupt China's stable and forwarding economic process. Wang Yahua, deputy director of the National Research Center of Tsinghua University, also argues that water shortage is the biggest challenge China is facing at present [5].

An emerging economy analyst Narita Ryusuke argues, in *Economist* of Japan, published on August 2, 2011, that to achieve medium-term and long-term economic growth, China needs to address resource and energy issues. China's power generation capacity is already four times as large as Japan's. With such a large scale, if China continues to expand its energy demand, it is likely to lead to worldwide resource and energy crises, which will bring the world economy into turmoil. In this context, resource and energy issues have already become the biggest risk China is facing.

HIGH-SPEED ECONOMIC GROWTH REGARDLESS OF NATURAL RESOURCE INSUFFICIENCY

Natural resources are the essential material conditions and bases for economic development. Abundant natural resources are often regarded as a great advantage for a country's economic development, while resource shortage becomes defects and disadvantages. However, natural resource is not the most important or the only condition in terms of economic growth. Only when rich natural resources are combined with social resources effectively can they become the positive factors that promote economic growth. Otherwise a country will often fall into "resource curse." The economic research and the practices of some countries in

recent decades have proved that many countries with insufficient resources have eventually entered the rank of the developed countries, while the growth paths of many countries with rich resources are full of twists and turns.

The basic logic of economics is based on scarcity, and without scarcity, there would be no economics. Scarcity of resources encourages people to work hard, to create novel things, and promote technological progress. In the development of global economy, a very interesting fact is that East Asian countries and regions, which have made great achievements in economic development, do not have abundant natural resources at the beginning of economic takeoff, such as Japan, South Korea, Hong Kong, Taiwan, and Singapore [6]. In particular, Japan, where domestic resources are scarce and most of the natural resources need to be imported, is one of the world's most developed countries, with GDP in the second place in the world for years and without being surpassed by China until 2010.

The rise of Japan and other countries shows that a country's resource scarcity does not matter so much as we imagined and will not be a fatal obstacle to economic development. In terms of economic development, rich energy and other resources are only one of the necessary conditions for economic development, and being a major energy producer and exporter does not mean that it can naturally become an economic power. Those economies with scarce resources have voluntarily abandoned traditional growth patterns for the purpose of freeing from resources scarcity. Instead, they rely on technological and institutional innovation to achieve faster economic growth, while many economies with rich resources such as in Africa have fallen into the resource-dependent growth trap.

THE FALL OF MANY RESOURCE-RICH COUNTRIES INTO "RESOURCE CURSE"

To secure common interests and shift people's attention from strategic missteps, in many cases some major energy-consuming and energy-importing countries have unconsciously blamed energy-exporting countries for energy shortage and economic recession. For example, in September 1975, the former US Secretary of State, Henry Kissinger, when addressing to the United Nations, publicly criticized OPEC. He believed that in the past 10 years, the most devastating blow to economic development had been the dominating and monopolistic price hike by

Cartels in oil-exporting countries [7]. If energy self-sufficiency is vital to economic growth of energy-consuming countries and energy import is the root of various problems, then can the energy-exporting countries really take off by relying on the rich resources bestowed by God?

Despite the many disasters and turbulences caused by the competition and interference of energy resources both at home and abroad, from the perspective of economic development alone, the rich energy resources are only one of the necessary conditions for economic development, and the major energy-producing and energy-exporting countries do not necessarily become the economic powers. Richness in oil and gas resources can bring huge wealth to the resource-exporting countries, enhance their geopolitical and international influence, but it can also make many countries fall into the "resource curse" and suffer from resources disasters, and become one of one of the important factors of risk for national development.

"Resource curse," a well-known proposition in development economics, mainly refers to the restriction of resources to economic growth, and the economic growth rate of a resource-rich economy tends to be slower than that of resource-poor economy. Many studies show that if there is no technological innovation and institutional innovation, the abundance of natural resources and economic growth are negatively related, and the natural resources have not always played a positive role in many countries' economic growth, but become the trap of economic development.

All in all, constraints of natural resources to economic growth are mainly reflected in the "Dutch disease" effect. In the 1950s and 1970s, the oil and gas mining industry in Dutch expanded rapidly, which, to a certain extent, restrained the development of manufacturing and service industries, so that the economic growth curve fell into the trap. The rapid expansion of the extractive industry has shrunk the traditional manufacturing sector, which is known as the "Dutch disease." At the same time, the rapid increase in export earnings from natural resources resulted in the appreciation of the national currency, so that the deteriorated trade conditions made nonresource sectors such as agriculture and manufacturing less competitive and more dependent on import protection and government subsidies for survival, and in turn export reduction and trade protection indirectly hampered economic growth [8]. In addition, the natural resource abundance has also increased the volatility of a country's economy (e.g., the sharp rise and fall of oil prices leading to the economic growth of the gulf countries and Russia), the weakened institution because of the inducement of greedy rent-seeking behavior, natural

capital crowding out human resources and impacting education expenditures, so that economic growth is dragged.

After two oil crises, western countries have been able to reduce dependence on oil by promoting energy efficiency and strengthening demand-side management, and the economy has been sustainably developed. The Gulf countries, such as Saudi Arabia, because of sudden huge wealth, have weakened the governments' motivation to upgrade and reform the economic structure and have never changed its single development mode of gaining wealth solely by exporting energy. The same is true of the former Soviet Union. The sudden rise of oil price not only shifted leaders' attention from the transformation of economic structure to energy diplomacy but covered up the existing dire economic difficulties by means of oil exporting. It maintained its extensive economic growth pattern and missed the best chance for economic and political reform. On the whole, Russia has maintained rapid economic growth since 2001, but the structure of excessive dependence on oil and gas exports has not been transformed substantially [9].

In many resources-rich countries, such as Nigeria and Venezuela, poverty, corruption, and mismanagement are widespread to a great extent, so resources become, to some extent, the risk factor for economic development and national stability. American economists Jeffrey Sachs and Andrew Warner have found that the economic growth rate of resource-rich countries is often lower than that of the countries where mineral resources do not play an important role. Paul Collier, professor at Oxford University, reckons that if a country lacks mineral resources, the risk of conflict is 0.5%, but if a country relies mainly on mineral resources, the risk of conflict will rise to 23%. Resources, he argues, are "the most important risk factor" for the country, more important than historical, geographical or racial factors.

SOCIAL RESOURCES AS THE MOST IMPORTANT FACTOR FOR CHINA'S DEVELOPMENT

Energy, especially oil, has long been regarded as a strategic resource, and its importance to human social progress and economic development is undeniable. However, with the deepening of globalization and the progress of science and technology, the attributes of energy as a kind of important natural resource have also undergone some changes. First, with

the improvement of international petroleum market and the development of world economic integration, the commodity attribute of oil and other energy is increasingly prominent, and its strategic attribute is more reflected only in the wartime. It is inevitable to be influenced by political factors, but for energy, as commodity first of all, market means is the primary way to solve the problems. In addition, in different stages of social development, the attribute of energy resources is also of great difference. In developing countries, natural resources are strategic resources, while the strategic resources of developed countries are social resources [10]. Natural resources are the material foundation for human existence and development, but with the continuous improvement of productivity, human resources become the leading factor for resource development and utilization. In today's world, resources such as energy resources are no longer the decisive factor of economic development, and the role of social resources is increasingly prominent.

In the opinion of German scholar Gerber Stengot, as stated in "Weltkrieg um Wohlstand Wie Macht und Reichtum neu Verteilt werden," many people think China is a resource-poor country, but it is not true. For the rise of a country the most needed resource is more than necessary in China, that is, the willpower. This kind of power is growing as a sustainable energy source [11]. According to Zhang Weiying, professor at Peking University, what China feels most worried about the future is not energy and environmental issues. Important as they are, they are not the most important, because the technological progress driven by market competition will surely help people find the answer. People do not have to be as pessimistic as the Malthus more than 200 years ago or the Roman club more than 30 years ago. The future development of China depends on the firm faith in the market economy [12].

Concerns about oil issues indirectly reflect our inadequate understanding of the international market and thus lack of confidence in the international market. Some believes that oil price is determined by foreign countries, while China, as the world's second largest oil consumer, has no say in pricing power. Some assume that the oil market is dominated by western forces [3]. For example, oil and gas development cannot meet the needs of national economic construction. And every year, tens of billions of dollars of foreign exchange is spent on importing oil. Once the international situation becomes turbulent, which country would be generous enough to supply us with oil even if we pay high enough? If we only looking for oil and gas abroad, once there is a sign of

trouble, then substantial risks would occur. So we must rely on ourselves to solve oil and gas problems [13].

On the whole, China is still in the initial learning and groping stage of establishing market confidence. For energy security, many countries have experienced the learning curve from controlling physical assets to relying on global markets. In the 1960s, Japan established the state-owned Japanese Petroleum Corporation and experienced the stage of making overseas oil and gas investment. Even today, the United States is talking about energy independence. China will eventually follow the rules of the learning curve, shifting from unilateral search for energy security to market-based multilateral cooperation. China is still in the learning stage in choosing whether to believe in market or controlling physical assets, and whether to make unilateral or multilateral cooperation. China may want to rely more on the market, but as prices are determined by other countries, it seems that it cannot fully believe in market forces [3].

In June 2014, Chinese General Office of the State Council promulgated *Strategic Plan of Action for Energy Development (2014–2020)*. It clearly proposed that we should by overall utilizing two resources and two markets, domestic and international, together with the effort in both investment and trade, both land and sea transport passages, accelerate our steps to make medium-term and long-term plans about the utilization of oversea energy and other resources. We would step up efforts to expand import passages by building the Silk Road Economic Belt, the 21st Century Maritime Silk Road, the BCIM Economic Corridor, and the China–Pakistan Economic Corridor. We should also actively support the "going out" of energy technologies, equipment, and engineering teams. We would strengthen the regional construction for the five key regions of our energy cooperation, the Central Asia, the Middle East, Africa, America, and the Asia-Pacific areas. We would deepen bilateral and multilateral international cooperation on energy by establishing regional energy trading markets, actively participate in global energy governance, and strengthen overall coordination and support "going out" of Chinese enterprises.

ENERGY SHORTAGE NO LONGER AS THE OBSTACLE TO DEVELOPMENT

Before reform and opening-up, energy supply had always been the bottleneck of China's economic development. China's supply of resources

was all from the domestic market, so without imports, domestic energy production was the highest ceiling for China's energy consumption. Whereas, in the days without energy imports, China's energy supply was not safe, and the insufficient supply of electricity was the normal state for economic life. Li Junfeng, deputy director of the former Energy Institute of National Development and Reform Commission, pointed out that after China's entry into the global system, through developing energy import-oriented and export-oriented economy, and depending on the moving resources all over the world to achieve economic growth, energy shortage is no longer an obstacle to development. As the result of the availability of cheap imported energy, China quickly came out of the energy shortage dilemma, rapidly expanded the scale of economy, realized rapid economic growth, and achieved unprecedented historical achievements. China benefited from the material contribution of international resource product market and international trade to China's economic takeoff [14].

Li Junfeng further emphasizes that we should not totally rely on the domestic market in order to solve China's energy supply problems. China is a country of large population and limited resources with oil and gas resources less than one-fifth of the world average. It is unlikely for China to rely only on domestic resources to meet the needs of economic development and the improvement of people's living standard. For many other resources, China must depend on imports. There is a misconception that it is very disgraceful to rely on imports. This is a one-sided account. Down through the years since the reform and opening-up, it has actually benefited a lot from the utilization of international mineral resources and energy. China operated well in relevant international trade, and this accounts for the fast developing economy. Without the imported 200 million tons of oil per year and with only the domestic coal oil, how much more would consumers have to pay? Without the imported nearly 1 billion tons of iron ore every year, how much higher the cost of China's steel would be?

According to the economist Mao Yushi, in terms of the grain issue, Japan's grain self-sufficiency rate is only 60% and South Korea is only 40%. Both of them depend highly on imported food, but they are by no means passive politically and diplomatically in international affairs. There is nothing wrong with Japan and South Korea relying heavily on the international market to solve the domestic food insufficiency. As for the means to solve domestic food insufficiency, it is essential to rely on

the international market to some extent, rather than relying entirely on self-sufficiency. Similarly, in terms of oil, Japan has almost no oil resources, and almost all crude oil needs to be imported. However, as one of the most developed countries in the world, Japan has not been criticized by other countries for importing substantial oil. There are many other countries similar to Japan. They rely heavily on imported oil, since they are unable to meet their oil demand in a self-sufficiency way. The only way out is to resort to market transactions. Every year, about 50% of China's oil consumption relies on imports, so the importance of protecting global markets is far greater than that of addressing other disputes in international relations [15].

THE RELATIVE IMPROVEMENT IN INTERNATIONAL ENERGY SECURITY

In peacetime, with the continuous development of the world economy and the expanding of energy usage, the strategy attribute of oil has been gradually transferred to the importance of using it as the basic energy. The amount of oil consumed in a modern local war is very limited compared with the oil consumed in normal economic life in the same period. With the acceleration of the economic globalization, the commodity attribute of oil, a kind of strategic material, becomes more and more obvious. Globalization has deepened the interdependence of countries, and the effect of military means on many international economic problems, such as energy issues, is getting dwindled. The energy supply security in peacetime has become the core of the current energy security problem [16].

The market and price risk, gradually replacing risks such as war risk and embargo risk, has become the primary risk for energy security in many countries. Historically, the contradiction between consumers and producers was the principal contradiction in the field of international energy security. However, since the mid-late 1980s, with the successive opening of producers, the contradiction between the two sides has been greatly weakened, instead they have become increasingly interdependent. At the same time, as the commodity properties of oil becomes more and more prominent, the intervention of political factors in international markets has also declined, and the possibility of using petroleum weapons by Arab countries has been greatly reduced.

Competition in today's world is the risk competition in line with the rules of the competing game, instead of war-dominated resource allocation. In peacetime, competing for energy is actually competing for profits and markets, with the aim of selling more oil and gas to obtain higher profits, rather than limiting the consumption of other countries. Although oil and gas supply is affected by international political events, as oil and gas are important commodities with huge profits, they still depend mainly on market mechanism. The competition of many great powers for international resources is the competition in line with the international rules, and these countries cooperate more than compete. In peacetime, competition, whether between consumers or between producers, mainly centers on profits. The more intense the competition, the more sufficient the global investment and the more guaranteed the international market supply will be.

Since the beginning of the 20th century, the international community's concern about energy security has been shifted from supply disruption in the past to rising oil price at present. Overall, there is less chance for oil supply disruption to happen again in the world just like that in the 1970s, and the major problems on international oil supply are the dramatic fluctuations in oil prices. In the premise of sufficient energy resources in the world, there is no need to worry excessively over energy shortage as long as the market price mechanism duly plays its role. In the free-competing market economy, price sensitively reflects and regulates the energy supply and demand or the scarcity degree of energy. It is pointed out by domestic scholars that the nonrenewable and scarce resources such as oil, as a matter of fact, will never be used up, because as long as the oil price rises high enough, there will be alternatives. The remaining oil is too expensive to develop, so no one will do that. The liquidity of oil is very strong, so normally, it can always be bought, but the price may vary [17]. Christopher Ruhr, the chief economist at British Petroleum Group, pointed out that despite a number of challenges in rapidly increasing global oil and gas supplies, the availability of oil and gas would not be problematic at a global level [18].

EVALUATION OF CHINA'S ENERGY SECURITY

While China's energy demand is growing, import ratio is increasing and international oil price is frequently fluctuating, it should be also noticed that the import ratio of China's oil and gas, especially the overall

energy import ratio, is still lower than that of some consuming powers. While the sustained economic growth has been driving energy consumption to grow, it has strengthened China's capabilities in safeguarding energy security and its influence on the international energy market. When it comes to energy security, the peacetime energy security should be strictly distinguished from the wartime energy security. Different from the energy supply risk in wartime, in peacetime more attention should be paid to the market and price risk.

Since mid-1990s, the amount of China's oil consumption and total import have mounted substantially, and now it has surpassed the United States and become the world's largest oil importer, but recently the growth rate in oil consumption and import has significantly declined. In 2000–10, China's oil consumption grew by 6.7% annually, compared with 4.3%, 4.5%, and 1.7% decrease in 2011, 2012, and 2013, respectively. China's oil demand elasticity coefficient has fallen from 0.7 (the figure from 2000–10) to 0.53 [19]. From 1993 to 2000, China's oil imports grew at an average annual rate of 32%. In 2000–10, except for the year of 2001, 2005, and 2008, with the growth rate at −14.2%, 3.3%, and 9.6%, respectively, the annual growth rate of crude oil imports in most years was above 10%, with 91.9% and 34.7% in 2000 and 2004, respectively. However, since 2011, China's import of crude oil has grown at a single-digit rate instead of double-digit rate in the past. The growth rate dropped markedly, with 6%, 6.8%, and 4% in 2011, 2012, and 2013, respectively [20].

Since 2014, due to the low oil price, the import of crude oil has bounced back to 335.5 million tons, with a year-on-year increase of 8.8% in 2015, but the import amount fell by 40.5% to 833.28 billion yuan in 2015 [21]. In 2016, the amount of imported crude oil rose further to 381 million tons, with an increase of 13.7%, the highest figure since 2011, and the total import reached $115.3083 billion. Meanwhile, China's refined oil exports have increased substantially. In 2015, China became a net exporter of refined oil, exporting 6.22 million tons, and then it further increased to 20,450,000 tons in 2016, but during 1992–2014, China became a net importer of refined oil [22]. With the aggravated situation because of the excessive oil refining capacity, China's pattern of both large oil import and export will become more and more prominent.

As China is major import country, the rise of international oil price has greatly increased the foreign exchange expenditure on oil imports, which in turn led to the built-up pressure of inflation and China Yuan appreciation but has not created pressure on foreign exchange payment,

thus the imbalance of international revenue and expenditure. It is predicted that the payment for net imported oil will remain within 10% of export revenues by 2020. In general, oil import is not a big burden on the balance of China's import and export trade and foreign exchange. A large part of China's oil is consumed as chemical raw materials, and these materials have corresponding international prices, so enterprises can purchase them from abroad or by domestic procurement. For a large number of export-oriented enterprises, they have always been following their development pattern of importing a large amount of crude oil and exporting plenty of refined oil, so the increase in raw material costs will not unilaterally damage China's interests. Till now, no data and evidence show that China's economic slowdown is closely related to oil prices.

Energy security is a comprehensive concept. It is only one side of the problem for the deepening of China's dependence on energy imports to increase the risk of the energy supply security. It does not necessarily mean energy supply insecurity or the decline of guarantee extent, because at the same time, China's overall guarantee capacity and anti-risk capacity is also substantially improved. Though China's dependence on foreign oil has increased, it is clearly seen that national economy has grown rapidly and society has developed with sustainability and stability, so oil consumption efficiency has been increasing. Comprehensively, in terms of energy supply meeting the demand of stable economic growth, China's comprehensive energy security guarantee is not reduced to a lower extent but significantly improved compared with that in the past. Moreover, with the deepening of the market-oriented reform and the sustainable economic growth, the comprehensive guarantee extent and anti-risk capacity will still be significantly improved.

In some cases, some people deliberately exaggerate the risk of China's energy security for some direct, partial, and local interests. In fact, the gap between global energy supply and demand is not large, and even sometimes, supply exceeds demand. The other exaggerated risk is the safety issue of energy transport. But is Malacca Strait really so important? Hundreds of miles away from Malacca Strait, Sunda Strait, and Dragon Strait can also be used as alternative routes. If the Malacca was blocked, China's oil tankers could choose to pass around these two straits, and the elevated cost for this route, apportioned to crude oil per barrel, will be less than 10% of the total cost of transportation [23].

In recent years, with the slowdown of growth in energy demand in China, some people analyze that energy will no longer be the bottleneck

for China's economy. In June 2017, at Global Forum for Energy Security 2017 launched by the Quantitative and Technology Research Institute of Chinese Academy of Social Sciences, the theme report "China's Energy Revolution: Supply-side Reform and Structural Optimization 2017 to 2050" was released. The report indicates that with rural people rushing to cities and towns and the nearly ending of the industrialization process, the peak of Chin's energy demand has already come. It is predicted that by 2020, China's total energy demand will drop to 4 billion tons of standard coal, 3.74 billion tons by 2030, 3 billion tons by 2050, and then the demand will be mostly stabilized. With the decrease of energy demand, energy will no longer be the bottleneck for China's economy. Instead, balance will be achieved between supply and demand. Under normal circumstances, supply should be slightly larger than demand, so that effective guarantee will be achieved [24].

DOMESTIC GUARANTEE AS THE KEY TO ENERGY SECURITY GUARANTEE

In the context of energy market globalization, the main challenge of China's energy security comes from the internal, and the energy problems in China are demonstrated more as phased, regional, and structural energy shortage, or resource constraints or resource bottleneck, which have not yet constituted great energy crisis. Compared with supply, the problems related to China's resource consumption pattern and utilization efficiency are more prominent. It is more difficult to solve environmental problems caused by energy development and utilization than to guarantee energy supply.

From the 1970s to the mid-1980s, the whole world felt anxious about energy security issues. Later, with the passage of time, the market changed greatly, and the government's main function on oil and gas development was shifted to establishing a framework to supervise market and to allow more market participants to join in. Government no longer regarded energy security as a primary issue but committed to creating efficient energy markets [25]. At the same time, maintaining the stability of the international energy market is also an indispensable part of ensuring the security of energy supply. The key of global energy security lies in an efficient international market. Without an effective international market, even the world's most powerful country cannot unilaterally guarantee its own energy security [3].

The experience of European and American countries shows that the best way to guarantee energy security is to develop effective energy markets. The efficient and competitive energy market is more beneficial to energy security than monopoly market. The domestic market that is diversified, efficient, open, and competitive is an indispensable part of national energy security system. Comparatively speaking, in China energy commercialization degree is low and the price system is imperfect. The price of raw materials, to a certain extent, still depends on regulation through administrative means. Driven by psychological expectations, enterprises will "buy more when the price rises," especially the centralized procurement arranged by administrative means, which is easy to be used by international speculators, so that China will inevitably fall into "price trap." Domestic scholars have pointed out that confusing "the issue of oil supply tension" in the market sense and "national security" in the strategic sense will cause unnecessary chaos and panic. We should make great effort to strengthen our understanding on international markets and adopt the international rules of the game as far as possible to avoid excessive use of nonmarket means. There is no need to worry too much about energy security. Building a perfect, new and creative domestic market is the best guarantee for our security [26].

Comparatively speaking, the marketization operation is also easier to be accepted by the international community, while the possession and control of resources, oil diplomacy, and other means will more or less create opportunities for some countries to propagandize the "China Threat Theory." In that case, other countries will be more hostile to and on guard against China, so that China's energy security environment will be worsened. The market means should be encourage to be employed to maintain energy security, the key of which is to improve the international competitiveness of China's oil and gas industry and the overall national power. In order to deal well with the relationship between safety and development, the purpose of security lies in stable and smooth development instead of safeguarding energy security at the expense of development. Otherwise, unnecessary resource waste becomes inevitable.

The construction of strategic petroleum reserves should also respect the market laws. The main function of strategic oil reserves is to deal with the oil crisis that may be triggered by oil supply disruption, rather than to tame oil price. Even in terms of taming oil price, the function of commercial oil reserves is far more important than that of strategic oil reserves. In western developed countries, the construction of strategic

petroleum reserves is based on a large number of commercial reserves. When there are very limited commercial reserves constructed by related Chinese enterprises, even if strategic oil reserves have to be used, its impact on oil prices is limited. In foreign countries, the construction strategic oil reserves in foreign countries is preceded with the legislation, so China should formulate *Resource Reserve Law* as soon as possible and manage it according to law. In particular, with the high oil price, we should strengthen market-oriented operation, well reckon the time and amount of reserves so that it will not become a financial burden. The Energy Development Strategy formulated in 2014 requires that energy emergency reserve system be basically completed by 2020. In April 2017, some departments, such as China's National Development and Reform Commission, revealed that by mid-2016, China had built nine national oil reserve bases, Zhoushan, Zhoushan Expansion, Chinhae, Dalian, Huangdao, Dushanzi, Lanzhou, Tianjin, and Huangdao national oil reserve caverns. With the stocks in these reserve bases and some social enterprises, Chinese storage crude oil reached 33.25 million tons.

In the past years, the question about how to get pricing power has aroused much attention and discussion. Some analysts have pointed out that as major oil consumption and import country, China should actively strive for pricing power or discourse power about international oil and other resource products. In fact, the pricing power of a country or its influence on price is closely related to its overall strength, especially its ability of operation and management under the market economy. China is often passive in response to the price fluctuation of international market because of its low marketization degree and weak market competitiveness. Under current conditions, it is better to focus on improving domestic energy and resource markets and improving the overall competitiveness of Chinese enterprises in the international market, rather than talking about competing for the so-called pricing power or speaking right by means of group buying. If the work is well done, the competitiveness of the market will naturally be strengthened and the influence on the price will naturally increase.

TO ADJUST MENTALITY AND ENHANCE SELF-CONFIDENCE

The overestimation of energy security risks mainly stems from the insufficiency of experience and self-confidence. For a long time, the long

history of traditional agricultural economy and planned economy has made China not only lack the experience of market economy but also the notion of market economy, which makes people have a poor understanding on the interdependence of the global economy and lack sufficient confidence in the international energy market. In addition, they have insufficient knowledge of how market economy can ensure the improvement of China's overall strength, so that they are not very confident in market economy.

In the international community, some people have argued that China's oil import growth has pushed up international oil price. This argument is known as the "China Threat theory." In fact, they are taking advantage of one of Chinese weaknesses, that is, Chinese people care much about what others say about them. As long as some media reported that it was China's huge oil imports that impacted the oil price in the international market, we Chinese people would be nervous. It seems that huge energy imports do increase the country's insecurity [14]. The weak-state mentality often makes us fall into the passive position in the world, also produces impetuous mood and excessive nationalism domestically. We say that China is a responsible country, so we should take a serious and responsible attitude towards the international community and handle affairs according to international practices and international laws [27].

Energy security in peacetime is different from that in wartime. We shall not at every turn adopt the thinking mode in wartime when facing energy issues. If full-scale war broke out, besides the military installations and military forces, important facilities and factories, such as transportation, energy, and communication would undoubtedly become the first targets of attack. At that moment, general energy security safeguard measures would have become ineffective. Oil security facilities in peacetime, such as oil strategic reserve facilities and their transmission and distribution systems, domestic oil wells, and multinational oil pipelines built in consideration of diversification, are instead, likely to be the most vulnerable targets in the war. Oil is indispensable material in the war. In the two world wars, the scramble for oil and the attacks on oil fields, refineries, transportation pipelines, and oil tankers were important contents of war.

Li Junfeng has pointed out that the biggest problem in China lies in the mentality that needs to be adjusted. China should take a more positive and confident attitude in engagement in international trade. Energy is important, but as common trade commodity, it's just one part, not the whole of economy. We should not elevate the microlevel energy trade problem to the national security level.

Han Xiaoping believes that in the context of globalization, when markets are integrated with each other, China's energy problems are not only problems of China itself, but problems of the whole world. Han Xiaoping believes that in the context of global market economy, market is the first factor. The countries that have a normative and perfect market may have the discourse power in the commanding height. The United States does not supply resources to the world, and besides weapons, aircraft, and software, there are few competitive products in the United States, but the United States has always been dominating the global economy since the two world wars. It is not its strong military force but its huge market with mature and perfect mechanisms in the United States that plays the key role. The United States is domineering in international relations just because they understand and effectively operate the power of this market [26].

Chen Xinhua has stressed that the out-of-place policy and system is the biggest hidden danger of energy security, and policy formulation requires objective and comprehensive information as well as talents who are proficient in the energy economy. Many Chinese engineers are knowledgeable in energy technologies, but in China there are seriously less talents who understand the energy economy and energy market. China, as a resource importer, should not adopt policies made by energy-exporting countries and in particular should not apply energy-exporting countries' control over resources to the control over our domestic energy market. As a resource-importing country, only open, diversified, and competitive markets can effectively absorb the global resources and capabilities and thus ensure our energy security. Making great endeavor to improve the domestic market is an important means to curb international environment deterioration [3].

In the opinion of Yang Guang, in the oil problem, people have added too much nationalism mood for rendering. Some people are very vulnerable to "international loneliness" and feel they are abused by "oil powers," thus falling into thinking fallacies. They assume that the United States and the US capital have controlled most oil producers, and for China there is no real oil security at all; without a strong blue water navy, for China there will be no oil security in the real sense; or political relations determine oil supply and demand. China does not have sufficient confidence in whether the international market can meet the huge demand for oil in China and does not have enough capacity to deal with international political and economic turmoil. The international oil market

is not classified according to the affinity of interstate political relations, and international oil prices are not divided into different categories according to the strength of overseas military forces or the level of diplomatic relations. If there is no large-scale war, business is still a business, oil is only oil after all, so the relation of supply and demand, market laws, and payment capacity will be more important than interstate relations and ideology [2].

MORE COMMON SENSES, LESS WRONG CONCEPTIONS

The excessive concern about China's energy security stems from the lack of some common senses and the application of some inaccurate and subjective concepts. For example, in some studies, "imported energy" is often referred to as "energy gap" or energy deficiency and seen as an abnormal phenomenon. Yan Lin has pointed out that "imported energy" is not equal to "energy gap." What corresponds to "energy gap" is our efforts to reduce energy import and ultimately regard eliminating energy import as our strategic energy goal. But in fact this is not our strategic goal, so we should fade away and delete this word from our common expression.

The increase of oil and gas imports should not be called the growth of "foreign dependence" or "external dependence." "Foreign dependence" or "external dependence" is a derogatory word, with a strong emotional coloring. It sends out the meaning of relying on others for survival, a sense of lacking dignity, and an illusory sense of insecurity. Energy import is a normal phenomenon. Under the condition of fast-growing economy and slow-growing domestic production, the degree of external dependence on energy can by no means be reduced, and instead, the decline of external dependence on energy is abnormal. That may mean economic disasters will happen. We should use less the word "dependency" and gradually alleviate "dependency" complex. Relatively speaking, using "import ratio" will be more neutral and appropriate and not easy to cause misunderstanding.

At the same time, domestic references include "50% as China's oil import warning line" and "more than 50% of oil supply as insecurity," This is a reflection of people's unease about the rise in the ratio of energy imports, and in fact there is no such a so-called 50% import warning line, and it is not scientifically based. In many countries in the world, their oil import dependence is 80%, 90%, or even 100%.

"Reserve-production ratio" is another concept that can easily cause misunderstanding. It refers to the ratio between remaining proved reserves and exploitation quantity of the year, sometimes interpreted by some analysts as the exploitable year. According to the data in *Statistic Review of World Energy* published by British Petroleum Group in 2011, the reserve-production ratio of remaining proved oil reserves around the world is 42. Some make wrong interpretations as the world's remaining proved oil reserves will be depleted in the next 42 years, or the present world oil will only be available for human beings for 42 years. In fact, the reserve of oil fields or the remaining proved oil reserve of the world is a dynamic concept, because as exploration deepens, new oil fields to be discovered tend to rise, and scientific and technological progress has made newly discovered reserves far more than the oil and gas already produced. From 1971 to 1996, the world's total oil output was 80.64 billion tons, but the new reserves reached 161 billion tons. The world's remaining proved oil reserves rose from 72.94 billion tons in 1971 to 240.7 billion tons in 2016, with the reserve—production ratio up from 28.3 to 50.8 [28].

In real life, many people doubt the function of trade and distrust the international market. In some people's so-called "common sense," shopping is inferior to grabbing things, believing that trade is a second-rate solution, the last resort, not the best way to obtain property. They think the strong does not need trade, but the weak can only suffer in trade. If possible, it would be better to gain profit by nontrade means, such as conquest and looting, so that it can be well guaranteed. But both the logic and the facts show that to get one thing, buying is the best way, while for grabbing the cost is very high and it is less effective. The free market system set up as a social organization by means of free exchange between people, cannot only realize the maximization of economic benefits but also realize the optimization of interpersonal relationships, encourage innovation, and service to a maximum degree, and minimize the violence factor in social life. In this world, the truly rich people are entrepreneurs instead of bandits. The truly rich country is not a country full of robbers, but many entrepreneurs [29]. On October 17, 2011, Thomas P.M. Barnett published his article "The New Rules: Debunking the Pentagon's Chinese Nationalism Hype" on the magazine website US *World Politics Review*. He argued that it is not necessary for China to declare war against America for the "ever-dwindling" world resources because China has already had money to buy whatever it wants to buy.

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