CHINA'S ENERGY (IN)SECURITY: AN ASSESSMENT

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Abstract: This article aims to analyse the contours of China's energy (in)security, highlighting the case of electricity, coal and, in particular, oil. The central argument is that China faces a significant energy shortage, which it seeks to fight through, for example, the massive purchases of oil that it has been operating abroad. Indeed, since 1993 - when China became a net oil importer - the Chinese have been investing in a sophisticated 'black gold' diplomacy that enables them to acquire more and more oil to meet their energy needs.

Key-words: Central Asia. China. Energy security. Oil.

Resumo: O presente artigo tem como objetivo analisar os contornos da (in)segurança energética chinesa, realçando o caso da eletricidade, do carvão, e, em especial, do petróleo. O argumento central é o de que a China enfrenta uma considerável escassez energética, a qual procura combater por meio, por exemplo, das massivas aquisições de petróleo que tem vindo a realizar no estrangeiro. Com efeito, desde 1993, ano em que a China se converteu em um claro importador petrolífero, os chineses têm vindo a investir em uma sofisticada diplomacia do 'ouro negro' que lhes permita adquirir cada vez mais petróleo para satisfazer as suas necessidades energéticas.

Palavras-chave: Ásia Central. China. Segurança energética. Petróleo.

Introduction

This article aims to analyse the contours of China's energy (in)security, highlighting the case of electricity, coal and, in particular, oil. The central argument is that China faces a significant energy shortage, which it seeks to fight through, for example, the massive purchases of oil abroad. Indeed, since 1993 - when China became a net oil importer - the Chinese have been investing in a sophisticated 'black gold' diplomacy that enables them to acquire ever-growing amounts of oil so as to meet their energy needs.

According to the U.S. Energy Information Administration (2012, § 7º), "in 2009, China became the world's second largest oil importer after the United States". However, in 2010, the Middle Kingdom has overtaken the United States, becoming "the world's largest energy consumer" (IEA, 2010, § 2º). The China's rise marks "a new era in the history of energy" (PENG BIN-WIN, 2012, p. 53). Indeed, "[its growing consumption] transformed the world energy markets and pushed up the oil and coal prices in recent years", with possible repercussions, in the long run, towards "the level of energy security of the United States" (PENG BIN-WIN, 2012, p. 53). In fact, it is estimated that the rapid development of China will have the greatest impact on world energy markets, as hundreds of millions of Chinese ascend to the middle class (WORLD AFFAIRS COUNCIL, 2013). The International Energy Agency (IEA, 2012) predicts that China will be responsible for an increase of over 40% in world oil demand in 2030. The geopolitical importance and potential

influence of China in the world have been expanding as a result of its “vast oil investments, long-term supply agreements, outstanding bank loans”, and a “vigorous energy diplomacy" (HERBERG, 2011, § 5º). Therefore, China has become a "key diplomatic actor in most oil and gas exporting regions in the world" (HERBERG, 2011, § 5º).

1. The contours of China’s energy (in) security

The Chinese market for luxury cars shall grow at “an annual rate of 12% by 2020”, compared with “8% for most of the passenger car market" (MCKINSEY, 2013, p. 4). It is expected that sales of luxury cars in the country shall reach "three million [units] in 2020", equaling those of Western Europe, and overcoming "the 2.3 million [in expected] sales" for the North American market (MCKINSEY, 2013, p. 4). However, "China could overtake the United States as the largest market for luxury cars already in 2016", when estimated sales reach "2.25 million units" (MCKINSEY, 2013, p. 4)

Both the U.S. Energy Information Administration (2011) and the International Energy Agency (2011) estimate that oil imports will increase at an alarming annual average of about 380000 barrels per day from 2009 to 2025. It is predicted that China could become the "world's largest oil importer (surpassing the United States) in 2020" (CLEMENT, 2011, p. 4), or perhaps even a little before 2020. In fact, Niu Li, renowned Chinese economist, notes that "China could overtake the United States as the world's largest importer of oil sooner than expected in 2015" (PEOPLE’S DAILY, 2013, § 2º).

The growing sense of vulnerability to possible disruptions in foreign supply has contributed to Chinese leaders increasingly perceiving energy security as "a matter of national security" (THE NEW YORK TIMES, 2011, p. 4). In a context where China has revealed a growing appetite for oil from the Middle East, and other parts of the world, it should be noted that most of this will have to travel long distances, passing through [vulnerable] maritime bottlenecks, as well as through railroads, Russian and Central Asian pipelines (THE WALL STREET JOURNAL, 2012).

Within 15 years, “60-70% of China's oil needs will most probably transit through the Strait of Malacca", and by "sea lanes of the Indian Ocean and Southeast Asia" (HERBERG and ZWEIG, 2010, p. 8). On the other hand, one cannot exclude a possible passage through the Arctic. Interestingly, "China intends to be one of the first countries to exploit the natural resources of the Arctic and to use this sea route for commercial purposes", claiming that "the Arctic is a part of the global commons" (LIN, 2011, p.14). To this respect, the Chinese Rear Admiral Yin Zhuo made the following comment in March 2010: "The Arctic belongs to all the world's people, since no nation has sovereignty over it ... China should consider playing an important role in Arctic exploration as it

has a fifth of the world population" (Cit. by CHANG, 2010, § 1º). This claim of 'moral' right to resources and space seems to reflect a certain appetite for *Lebensraum*.

Given the above, "the way China deals with its energy security will have major repercussions on the competitiveness of the global energy diplomacy in the future, as well as on the effectiveness of the management institutions in the oil market" (HERBERG and ZWEIG, 2010, p. 8).

The Middle Kingdom has long been able to meet its energy needs through the use of domestic reserves (HURST, 2007). Until 1993, "China was a major oil exporter to the East Asian countries" (ROSEN and HOUSER, 2007, p. 20). However, since 1993 its domestic reserves have no longer been able to meet demand. Since then, China has become a "net oil importer" (EVANS and DOWNS, 2006, p. 2). Nevertheless, it is clear that oil production in China continues to be significant (PEOPLE'S DAILY ONLINE, 2010). Currently, according to the International Energy Agency (IEA, 2012, p. 3), "China is one of the world's most important producer countries of oil and gas". In 2010, China's oil production exceeded "4 million barrels per day (mb/d)" (IEA, 2012, p. 3). However, due to a strong and sustained economic growth, its demand for oil has also increased "from 4.6 mb/d in 2000, to more than 8 mb/d in 2009" (IEA, 2012, p. 3). Moreover, "China has 20.4 billion barrels of proven oil reserves as of January 2012, i.e. over 4 billion barrels more than three years ago, the highest in the Asia-Pacific region" (U.S. ENERGY INFORMATION ADMINISTRATION, 2012, § 4º). The largest and oldest Chinese oilfields are located in the northeastern region of the country. The Middle Kingdom produced about "4.3 million oil barrels per day in 2011" (U.S. ENERGY INFORMATION ADMINISTRATION, 2012, § 4º). The International Energy Agency (2011, § 6º) predicts "stabilization, in the long-term, reaching 4.7 million barrels per day in 2035".

The increase in population, as well as of "the standard of living of citizens", and of "the levels of industrialization of a country" produces an "increased energy consumption" (DEMIR, 2010, p.522). In the case of China, it is unquestionable that there has been both a tremendous growth in terms of population, as well as in terms of the standard of living of its citizens over the past decades, which translates therefore in a "greater need for oil" (HARDY ZHU, 2012). In the coming years, energy demand is likely to grow, especially in southern and eastern areas of China, poor in energy resources, but where the economy is vibrant (LIN, 2012). By 2020, oil demand in China could reach "12.2 million barrels per day" (INTERNATIONAL ENERGY AGENCY, 2012, p. 3).

In order to meet the energy needs of the Middle Kingdom, "China's diplomacy has been working actively since the mid-90s, in order to improve its relations with the major oil exporting countries, to ensure a safe access to energy sources abroad, [...] investing in infrastructure projects" (CAUSEVIC, 2012, p. 1). In the attempt to find business partners, the Middle Kingdom has been

importing large quantities of oil from Saudi Arabia, "about 1.1 million barrels per day in 2012" (AL-TAMINI, 2013, § 9º). According to the U.S. Energy Information Administration (2012, p. 8) "the Middle East remains the largest oil supplier to China, although African countries, particularly Angola, have come to occupy an increasingly important place in the context of China's oil imports in recent years". In 2011, "the Middle East provided 2.6 million barrels per day (51%)", with emphasis on "(from) other regions that export to China (stand out) Africa represents (with) 1.2 million barrels per day (24%), the Asia-Pacific region (with) 173 000 barrels per day (3%), and 1.1 million barrels per day (22 %) coming from other countries" (ENERGY INFORMATION ADMINISTRATION, 2012, § 8º). In turn, states like Iran, Oman, Yemen, Sudan, Congo, Russia and Kazakhstan are also worthy of attention, (among other) as China´s trading partners (of China, regarding) in oil supply. In 2011, "the Chinese state oil companies operated in over 30 countries, making acquisitions of oil assets (oil extraction from deposits that [China] had acquired) in at least 20 countries" (LEE, 2012, p. 84). 2010 data show that 23% of offshore Chinese oil-equity activity occurred (was conducted) in Kazakhstan, 15% in Sudan and Venezuela, 14% in Angola, 5% in Syria, 4% in Russia, and 3% in Tunisia (JIANG & SINTON, 2011). In turn, Nigeria, Indonesia, Peru, Ecuador, Oman, Colombia, Canada, Yemen, Cameroon, Gabon, Iraq, Azerbaijan and Uzbekistan make up the remaining 20 percent (JIANG & SINTON, 2011).

Like many other countries which import energy resources, "China does not have an overall strategy for energy security" (HOWELL, 2009, p. 191). There is, instead, "a centralised policy" that sometimes leads to "competing interest groups, exaggerated rhetoric and initiatives at the provincial level" (HOWELL, 2009, p. 191). Moreover, China pursues a "strategy of petroleum assets" which besides" not providing energy security" even aggravates instability" (GILGUM, 2009, p. 12). In fact, "the strategic choice currently employed by policy makers is unsustainable, given the sharp increase in demand for oil from China in the future" (GILGUM, 2009, p. 12). Beijing must realise that "it cannot operate effectively outside the global energy market" and that "the diplomatic and multilateral cooperation is essential to the future of energy security" (GILGUM, 2009, p. 12).

There are several government agencies in China that oversee energy policies. However, these agencies are not integrated or hierarchised in terms of political power and have overlapping areas of authority, which has led to intense rivalry and inefficient management (BEST & LEVINA, 2012). The *National Development and Reform Commission (NDRC)* is "the main body in charge of policy making and the regulatory authority of the energy sector", while "the other four ministries oversee various components of the country's oil policy" (BEST & LEVINA, 2012, p. 16). The government created the "*National Energy Administration* (NEA)", in July 2008, aiming to operate as "the energy regulator par excellence" (ASIA TRADE HUB, 2013, § 1º). The NEA, together with the

NDRC, "is responsible for approving new energy projects in China, establishing domestic energy prices, and implementing the energy policies of the central Government, among other functions" (ASIA TRADE HUB, 2013, § 1º). The NDRC is "a department of the State Council of China, the highest organ of executive power in the country" (ASIA TRADE HUB, 2013, § 1º). In January 2010, the government created a "National Energy Commission", aiming to "consolidate the energy policy among the various agencies of the State Council" (U.S. ENERGY INFORMATION ADMINISTRATION, 2012, p. 3).

The situation has not undergone substantial changes since Andrews-Speed (2004, p. 56) wrote, in 2004, about the "chronically fragmented nature of the Chinese energy policy" resulting from the "continuous power of state energy companies" combined with "the lack of a robust and well - equipped agency, in charge of the formulation of energy policy". In the absence of a powerful and influential Ministry of Energy, "the Chinese energy policy is actually more disaggregated than that of many other countries" (HOWELL, 2009, p. 191).

It should be emphasised that "China has created its first Ministry of Energy, in 1988, from what remained of the old agencies of electricity, coal and oil, but dissolved it in 1993, since the regulator failed to control the powerful state-owned enterprises that dominate the sector" (REUTEURS, 2012, § 20º). Currently, there is a recognised sense of urgency on the part of industry groups, as well as other Chinese economic and social sectors, in creating a comprehensive "Ministry of Energy, capable of taking control of the energy industry of the country, which is currently managed by various government departments" (CHINA DAILY, 2012, §18º). Although *China Energy Society* states that "the potential of power distribution between all these bodies may be complex", it admits, however, that "the creation of a new super-ministry" is not only possible, but, effectively, an urgent need" (CHINA DAILY, 2012, § 1º).

Oil is considered a fundamental strategic asset (due to its importance) for China's economic development, but at the moment is proving to be the element par excellence of the Middle Kingdom´s present structural energy insecurity (CHINA ECONOMIC REVIEW, 2013). Beijing demonstrates concern about the fact that its domestic production of oil and gas have stalled, and "initiatives to explore non-conventional energy reserves, such as shale gas in western region of the country, and deep-water reserves in the South China Sea also remain underdeveloped" (THE WALL STREET JOURNAL, 2012, § 19º).

The first factor that contributes to Chinese oil insecurity is therefore the dependence - "currently, more than 50 percent" - of China on foreign oil, which will increase to "60-70 percent in 2015" (LEE, 2012, p.76). At the rate of current production and exploration, Chinese oil reserves will last only about 10 years (BP STATISTICAL REVIEW OF WORLD ENERGY, 2012). Based

on a historical analysis of oil consumption in China, from 1980 to 2008, "the annual growth rate of oil consumption in the country was 2.75% during the period 1980-1990, which increased to 6.93 % during the period 1990-2000, reaching, after 7.04%, from 2000 to 2008" (HAIBO WANG, 2010, p. 2). This means that China is too far from the era of self-sufficiency in oil, (from which) it (had) enjoyed since the mid-60s, depending currently on increasingly imported oil (ZHIDONG LI *et al*, 2005, p. 2).

There are some long-term trends in the Middle Kingdom, which give the world the assurance that it will continue to import more and more oil. One concerns the rapid urbanisation, which requires higher power consumption (O'NEILL *et al*, 2012). At the current rate, the urbanisation in China will tend to reach a level in the range of "55% to 60% between 2015 and 2020", and by 2030 Michael J. Silverstein estimates that "there will be approximately 270 million more urban dwellers in the country" (J.P. MORGAN, 2013, p. 6). However this data is important with regard to China's energy (in) security, since, as indicated by *The Outlook for Energy: A View to 2040* (2013, p. 4), "an urban resident consumes more energy than a rural inhabitant" and, on the other hand, "urban dwellers tend to have an easier access to more modern and efficient fuel". In practice, the growth of this city population requires increased energy consumption, particularly in the transport sector which will lead to China importing more oil (ROLAND BERGER STRATEGY CONSULTANTS, 2011).

Another factor linked to the Chinese oil insecurity, and that tells the world that the country will continue to depend increasingly on foreign oil, concerns the fact that China has "entered a period of rapid development of urbanization and heavy industrialization" (XIAOXI LI & JIANCHENG PAN, 2011, p. 308). The Middle Kingdom produces vast quantities of steel, aluminum and concrete, which require substantial energy consumption. This is further compounded by the fact that Chinese factories are not energy efficient. In fact, China needs "20 percent more energy to produce steel than the international average, or 45 percent more energy to produce concrete", and "the aluminum industry consumes as much energy as the entire commercial sector" – that is, "hotels, restaurants, banks and shopping centers" (FACTS & DETAILS, 2012, § 45º).

Another trend related to Chinese oil insecurity, and that points to a greater dependence on foreign oil, concerns the emergence of a middle class in China - estimated at "more than 300 million people" and "that now exceeds the entire population of the United States" (CNN Money, 2012, p. 8) – which starts opting for air transport, while simultaneously fascinated by cars (THE GUARDIAN, 2012). Indeed, the number of plane users in China more than tripled from 27.3 million in 1990 to 83.7 million in 2002, and, during the same period, the number of car users in the country increased more than 12 fold, from 198,000 to 2.42 million (ECONOMIST

INTELLIGENCE UNIT, 2013). Moreover, it is estimated that "in 2030, the number of drivers in China will reach 440 million people, 400 million of which will be drivers of passenger vehicles" (LINWEI MA, *et al*, 2012, p. 4). In turn, the *APEC ENERGY DEMAND & SUPPLY OUTLOOK* (2013. p. 42) indicates that, in 2035, there will be "343 vehicles per 1000 people, as opposed to 58 per 1000 people in 2010".

Consequently, it is predicted that energy demand relating to the transport sector in China, around 2035, will be about "two and a half times that recorded in 2010" (APEC ENERGY DEMAND & SUPPLY OUTLOOK, 2013, p. 42). Such an increase will be fueled by two key factors. On the one hand, "economic growth will continue to be fast, with an estimated increase in real GDP per capita equivalent to the purchasing power of about $ 32,400 in 2035" (APEC ENERGY DEMAND & SUPPLY OUTLOOK, 2013, p. 42). The high growth of the economy will result in the "rapid increase of vehicles per inhabitant", which will be "particularly evident during the period 2010-2020" (APEC ENERGY DEMAND & SUPPLY OUTLOOK, 2013, p. 42). It should be considered that while oil is susceptible of potentially replacing coal, nuclear and hydroelectric power, no other primary source can, however, replace oil at a reasonable economic cost, as explained by Michael Kumhof and Dirk Muir, "substitutes suitable for oil, at the necessary scale and horizons, simply do not exist" (INTERNATIONAL MONETARY FUND WORKING PAPER, 2012, p. 4).

Given the trends listed above, it is therefore clear that China unquestionably needs oil. However, as explained due to the reduction of its domestic oil reserves, and therefore the high dependence on foreign oil, it is understandable that China's oil security is at stake (CÁCERES, PEACE & CONFLICT MONITOR, 2013). According to a Report by China 's Energy Development Strategy and Policy, there is oil insecurity when "the sudden interruption of oil supplies, oil shortages, or rising prices, causes damage in an economy, to a degree that is determined by its dependence with regard to foreign oil, the scale of the fluctuations in oil prices, and its responsiveness (which includes, for example, strategic oil reserves, alternative energy sources, and a system of early warning)" (REVIEW OF ECONOMIC RESEARCH, 2004, p. 12).

If, on the one hand, domestic Chinese oil reserves are insufficient to meet the energy needs of the country (being a source, therefore, of energy insecurity), the availability of foreign oil to China and the reliability of oil supplies to the country threaten its oil security. Indeed, being undeniable that China has developed dependence on foreign oil - it is estimated that "in 2015 Chinese oil imports [shall] stand at around 320 million tons, an increase of 41% compared to 2010" – Beijing´s first concern shall be to make sure that there is enough oil abroad to meet the energy needs of the

country (HAIBO WANG, 2010). After all, "China's energy security can be defined as the attempt to ensure the reliability of the external supplies of oil at stable prices" (LEE, 2012, p. 77).

Since China became an oil importer, in 1993, its leaders have considered the development of relations with oil producers in the Middle East as a diplomatic priority (BLUMENTHAL, 2005). Although there is enough oil abroad to meet the Chinese energy demand in the coming years, one has, however, to acknowledge that "most Chinese oil imports come mainly from politically unstable regions" (ZHONGXIANG ZHANG, 2012, p. 329). One might question the effectiveness of this option (i.e., to resort to these unstable producers), however, it is essential to have in mind that the fact that China has entered late in the international oil market, had already won a first-mover control over the best existing oilfields, leaving Beijing with little choice beyond the establishment of agreements with the so-called rogue states (ZHONGXIANG ZHANG, 2007, 2010). This explains why "the Chinese state oil companies are so committed to acquire assets in West Africa, Latin America, Central Asia and Southeast Asia" (HERBERG, Testimony before the US-China Economic and Security Review Commission, 2012, § 5º). However, "under the expansion of its activities abroad, the Chinese state oil companies overestimate the probability of a possible disruption of oil supplies" (ZHONGXIANG ZHANG, 2012, p. 339).

This explains why it is therefore important to consider the question of the reliability of the oil supply from its source of origin. Reliability is defined as "the level of exposure to various risks to which China´s energy supply are subject" (SHAOFENG, 2011, p. 616). It may happen that oil imports are at risk of being refused or discontinued as a result of a hostile bilateral relationship, or instability in the supplying countries, due to war, social unrest, ethnic conflicts, terrorism, among others (IEA, 2011). That said, "countries like Sudan, Angola, Nigeria and Myanmar have all been buffeted by internal conflicts, and states like Ecuador and Venezuela have strained relations with neighboring countries" (SHAOFENG, 2011, p. 617). The major international oil companies are often "subject to repeated incidents of kidnapping and murder of their workers in local oil fields" (SHAOFENG, 2011, p. 617). In China's case, the question of the reliability of its oil supply is therefore urgent, since this type of countries undergoing major social and political instability, have sometimes seen attacks on oilfields and Chinese workers (murdered or kidnapped), as is the case of Sudan or Ethiopia (CHINA DAILY, 2007).

2. The cyclical dimension of China's energy insecurity

China has been battered by frequent interruptions in electricity supply, extremely damaging to the economy, since 2002 (BOYD, 2012). Hence, the Chinese power grid failures have raised fears about a 'domestic electrical insecurity' (ZHA DAOJIONG, 2006). In fact, "for every summer in the

last decade, the most industrialized provinces of China were subject to interruptions in electricity supply" (ROBERT, 2011, § 1º). Thousands of factories and companies, located in economically developed areas, are forced to suspend their activity at times of peak production (ASIA PACIFIC NEWS, 2011). For example, in the province of Zhejiang - the regional economy that most grows in China - more than half of private businesses were without electricity in the first half of 2004 (the year in which the country suffered "the worst power cuts since the beginning of 90s"), about 11 days per month, on average (XINHUA, 2011, p. 7). More recently, "in the first four months of 2011, 24 Chinese provinces have suffered 'blackouts' ", which caused an economic loss of approximately "10.6 billion yuan" (EDWARDS, 2012, p. 22).

In connection with the electricity supply disruption in China, we should mention the excessive dependence of Chinese industry on coal, from which approximately 79 percent of the country's electricity is produced (BLOOMBERG NEWS, 2012). China is rich in coal, which represents "approximately 95 percent of the existing fossil fuels in the country" (JIANJUN TU & JOHNSON-REISER, 2012, p. 2). 60 percent of coal reserves, including the coal with the highest quality - that is, with less sulfur and ash - are located in the north of the country (the main areas of coal mining are "Shanxi province, the Autonomous Region of Inner Mongolia, and Shaanxi") (EDWARDS, 2012, p. 6). The proven coal reserves - 170 billion tons - existent in the country correspond to 19 percent of the world total, ranking second largest in the world, after those of the USA. Since the Chinese economy opened up to the world, in 1978, "coal consumption has grown steadily as a result of electricity production and industrial use" (JIANJUN TU & JOHNSON-REISER, 2012, p. 2). The 12th Five-Year Plan (2011-15) demonstrates the key role that coal plays in the energy, economic and environmental future of China's twenty-first century. Although the country has vast reserves of coal, "the danger of coal mines, as well as the over-utilization of the railway infrastructure explains that it is easier for China to import coal, instead of exploring its own domestic reserves" (SEATTLE TIMES, 2011, § 43º).

Coal will continue to be, in the case of the Middle Kingdom, "the main energy source for the next two decades", since the intensity of its use, makes it quite complex to replace" (CHOW, 2011). On the other hand, the growing energy needs of a China with a rapidly expanding economy "cannot be met neither by gas nor oil" (FONSECA, 2011). This expert compares the ability of producing electricity from coal in China to the production capacity of electricity in the UK, and admits, like Edward Chow, that China's trend to use coal in the coming years should remain (FONSECA, 2011). Currently, the country has "13 nuclear plants in operation, another 30 under construction and 90 more in planning" (EUROPEAN COUNCIL ON FOREIGN RELATIONS, 2013, §11º).

Although the 2005-2020 Program for the development of nuclear energy, released by the NATIONAL DEVELOPMENT AND REFORM COMMISSION (2011, p. 3) in 2007, has "drawn a target for the production capacity of the country of 40 million GW until 2020", the National Popular Congress decided to increase it to "80 million GW until 2020". However, the construction of the planned nuclear power plants tend to supply "only 4% of China's electricity needs until 2020, which is clearly very little for a country with huge energy needs" (FONSECA, 2011). That said, although coal is a highly polluting energy source, the expert argues that "it plays a key role in the design of energy security", because in the case of China, "it is an endogenous resource", i.e. "the country has very considerable coal reserves, and therefore will continue to explore it" (FONSECA, 2011). On the other hand, there is no doubt that "coal guarantees China its energy autonomy", or, at least "helps to minimize the extraordinary impact resulting from a threat to global flows of oil and gas" (FONSECA, 2011).

In summary, the lack of electricity is a crucial factor in the context of China's energy insecurity. It is a source of cyclical uncertainty, to the extent that it is "regional, seasonal, and casual" and affects specific sectors (CHINA DAILY, 2011). In other words, it occurs mainly in the summer and in the traditional Lunar New Year (January/February depending on the lunar year), and especially at times of peak energy consumption (ZHANG JIAN, 2011). The most affected sectors of the industry are the ones that consume more energy, such as the case of "steel, coal-based chemical products, and aluminum smelters" (KOH GUI QING & WANG, 2011, p. 11). In terms of regions, the most affected are "the east coast, south and central China" (KOH GUI QING & WANG, 2011, p. 9).

3. The Chinese perception of energy vulnerability

There seems to be no clear definition of the concept of energy security in academic studies or in Chinese official documents (LABANDEIRA & MANZANO, 2012). The Chinese Experts use often the same definition summarised that their U.S. counterparts use – “adequate, affordable and reliable supplies - although, in general, do not specify what they mean by these terms" (DOWNS, 2006, p. 13).

The strategy used by the Chinese Government, with the aim of ensuring the energy security of the country, has been based in large part on the belief that oil is a strategic asset (CHINA’S ENERGY POLICY, 2012). In the 2012 White Paper, dedicated to the energy issue, the Chinese government announced that "the country is making special efforts to strengthen its capacity to provide energy, so as to improve its emergency energy reserves and to mitigate its dependence on external energy sources" (CHINA’S ENERGY POLICY, 2012). In China,

> policy makers and state oil companies embarked on a multifaceted strategy aimed at improving the country's energy security through the acquisition of oil assets abroad, by diversifying suppliers, developing new policies to reduce demand, investing in energy substitutes, building strategic oil reserves and maximizing domestic production (BLUMENTAL, LIANG CHUA & AU 2009, p. 5).

Beijing's strategy with regard to energy security covers the acquisition of stakes in oil fields abroad, the military protection of vulnerable shipping lanes, and a 'race' for energy resources (SHAOGENG, 2011).

The Chinese government has encouraged oil exploration abroad, providing "low interest loans" to the Chinese state oil companies (LEE, 2012: 85) and sharing the responsibility of assisting the Chinese leadership so as to ensure a stable supply of oil, "NOCs have the task to acquire more assets in oil and gas, to diversify energy sources, and ensure the security of oil and gas pipelines, as well as supply contracts, in the long-term, with foreign producers" (SHAOFENG, 2011, p. 606).

China's growing dependence on external energy resources has led Beijing to make efforts in order to ensure greater control over energy supplies of oil and gas from abroad (JIANG & SINTON, 2011). In practice, "there are three ways for a country to securitize its oil and gas supplies", namely, "by trade, through oil diplomacy and by force" (SHAOFENG, 2008, p. 79).

Most studies on Chinese oil diplomacy either provide a static view of the motivations of China, gathering government and NOCs as if they were a single entity, or perceiving these as an extension of state policy (ELLINGS, 2006; TAYLOR, 2006; JAFFE & LEWIS, 2002). Therefore, such studies tend, implicitly or explicitly, to analyse the behavior of each NOC in international markets as corresponding *ipsis verbis* to the strategic behavior of Beijing, which, for experts like BO KONG (2010, p.154), does not correspond to reality, since "NOCs' behavior is distinct from the Chinese Government's behaviour". Some authors such as XIAOJIE XU (2007) and SIZHI GUO (2007) carried out an analysis of the relationship between Government and NOCs, in search of oil and gas abroad. However, their findings are not sufficient to reveal the motivations of NOCs, as well as those of the Chinese Government.

The (Chinese) oil diplomacy can be defined as "activities abroad, with participation of the central Government, whose aim is to secure the external resources of oil and gas, or to promote business cooperation between states, around these resources" (SHAOFENG, 2008, p. 80).

The concept of 'energy security' - "which has proved a practical concern, for about a century, and emerged as a distinct area of academic studies over the past decades" - has gained a certain expression within the energy debate that has gained a place in China since 1993, when the country became a net oil importer (CHERP & JEWELL, 2011, p. 1). Nevertheless, "it was mainly from 2000, with the doubling of China's oil imports, that the concept of energy security has become a

relatively frequent topic of Chinese public discourse" (DOWNS, 2006, p.13). Analysing in more detail this discourse, it is clear that energy security concerns "to ensure the supply of energy resources in sufficient quantities for the protection of the main goals of the Chinese government, at prices that are not too high, nor too low, in order not to undermine these goals" (DOWNS, 2006, p.13).

China sees energy security as the guarantee of obtaining the necessary energy resources for a sustainable - economic and social – development, seeking to ensure that the production and use of these resources do not harm the environment (QINHUA XU, 2007). On the other hand, in the Chinese view, energy security comprises

> the diversification of the sources of energy imports, the increasing of the share of oil and gas imports from Russia and Central Asia; enhancing investments in oil and gas infrastructure [...]; the creation of strategic oil reserves, controlled by the government; the adjustment of energy consumption and of the production structure; the development of nuclear energy; and the implementation of a regional energy system (DWIVEDI, 2006, p. 147).

According to IONELA POP (2010, p. 202), "the [Chinese] strategy of international investments" is guided by the following features:

> Acquisition of participations in blocks of high exploration potential, proven reserves or asset owning corporations; government support through economic and diplomatic initiatives; integration, versatility and cooperation between the three major Chinese state oil companies; a low profile in investments; minimization of public disclosure of details of acquisition; modernization of naval forces aiming to protect sea lines; commitment to building oil and gas pipelines; promotion of regional and bilateral energy cooperation; participation in the Energy Charter Treaty.

That said, Chinese leaders face oil, first as "a necessary resource to Chinese economic growth due to the lack of effective substitutes - including from the point of view of costs - for diesel, gasoline and aircraft fuel" (DOWNS, 2006, p.13). On the other hand, "oil is the basis of China's rise to superpower status" (DOWNS, 2006, p.13). The peaceful rise of China internationally is not directly related to Taiwan, but with the global competition for energy resources. It should be noted that the legitimacy of the mission and the existence of the Chinese Communist Party depends considerably on achieving the above-mentioned objectives. A former Chinese Foreign Minister, Li Zhaoxin, said in an interview that "[o]ur diplomatic work should provide a vigorous support to efforts that aim to promote international energy cooperation" (Cit. by SHAOFENG, 2008, p. 81).

Experience shows that “money does not necessarily buy the Chinese energy security", as shown, moreover, by the failure of the acquisition proposals of the Russian oil company Slavneft in 2002, and the North American Unocal in 2005, by Chinese oil companies (DOWNS, 2006, p. 15).

To the impotence of Chinese financial power before the above-mentioned cases of economic nationalism, one must add "the perception in Beijing that the United States realizes, evermore, military power as a legitimate tool to win access over energy sources" (DOWNS, 2006, p. 15). Thus, China is aware that "the world oil market is vulnerable and unpredictable", since both producer and consumer states of energy resources strive to impose their rules and defend their interests (KREFT, 2006, p. 112). In this respect, "not willing to rely on these markets to meet its current and future energy needs, Beijing has pursued an economic nationalism in many parts of the world" (LEE, 2012, p. 75).

There is, in practice, "a certain idea that while China is willing to pay the market price for oil, the world market will satisfy its energy needs" (DOWNS, 2006, p. 15). At worst, if a producer country decides not to sell more oil to China, then the Middle Kingdom can always turn to other States wishing to do so (YUSHI, 2006).

In Beijing´s view, energy security has become "too important to be left to the mercy of the markets" (LIEBERTHAL & HERBERG, 2006, p. 13). Therefore, it will continue to be a driving force of China's foreign policy, and Beijing will tend to engage in a more extensive and intense way, with the producing states of energy resources, in a kind of win-win cooperation, "in which China provides a political and economic support to the governments of those countries in exchange for access to oil" (CARLSON & XIAO, 2011, p.96).

In order to defend the strategic objectives of the Middle Kingdom, it is inevitable that Chinese leaders deem it necessary to influence the domestic policies of countries in which China has economic interests. In this regard, "China's status as an emerging economic superpower requires that it becomes a more muscular global actor in pursuit of its interests" (DORSEY, 2012, §15º). Ultimately, this may mean" [China] will take position on domestic disputes and conflicts worldwide, which have influence on the national security interests of China" (DORSEY, 2012, §15º). Likewise, "the country may need to maintain military bases in key regions, likely to ensure its energy supply and the security of its citizens abroad" (JAKARTA GLOBE, 2012, § 1º). China has been distancing itself from an "ultra conservative stance based on principles of sovereignty" (LAGERKVIST, 2012, § 19º). For these reasons, it will be increasingly difficult for the Middle Kingdom to keep its old principle of 'non-interference' (LAGERKVIST, 2012, § 22º).

There is a certain recognition between Chinese foreign policy dignitaries - although through an unofficial discourse - that "the principle of non-interference is unsustainable and impractical" (JAKOBSON, 2008, p.128). With the Middle kingdom having to deal from now on with a "non-traditional growing number of threats", in countries in which it has commercial interests, it is evident that "Chinese policymakers have reflected about the best way to free China of what can be

considered as the 'non-interference trap'" (JAKOBSON, 2008, p.128). Moreover, Beijing is aware of the contradiction that arises when a rising power, which advocates building a 'harmonious world', as is the case of China, is perceived by the international community as not paying attention to international crises, such as genocide.

The Chinese leaders tend to conceive the United States as "a country capable of manipulating the global energy markets in its favor, to the detriment of Chinese interests" (KANG SHENG, 2006, p. 80). Discussions on the need to contain the 'China threat' (in terms of energy security), by U.S. lawmakers and other Western officials, are a recurrent theme in Chinese political circles (ZHA DAOJIONG, 2006; LAI HONGYI, 2007).

After having mentioned how the Chinese leaders conceive their countries energy security, it is nevertheless also relevant to point out, albeit in very general terms, how the rest of the world understands this issue (YERGIN, 2012). In this respect, "the sustainable development of Chinese economy is intrinsically linked with the world economy", thus "China's energy diplomacy has, therefore, a significant impact on the level of global energy security" (QINHUA XU, 2007, p.2). This raises a concern about how much more oil China (and India) will need to import the next two decades, and how quickly the world's oil reserves will be depleted if China's dependence on foreign oil remains (DOWNS, 2006). The increasing consumption of foreign oil, from China, has been perceived as responsible for the increase in oil prices and instability in the global spot market for oil (HOLMES, 2011; HONGTU ZHAO, 2005). As Barack Obama had already warned, on March 8, 2012, "in the long-term, the main reason why oil prices will tend to rise is due to the growing demand in countries like China, India and Brazil" (ECONOMIC TIMES, 2012, § 2º).

Secondly, China's energy needs have been the subject of increasing attention, since China is currently the largest emitter of greenhouse gases (THE WASHINGTON POST, 2013). The way Beijing deals with the challenges of conservation and energy efficiency, and diversification of energy supply sources, are issues of significant interest to the world, starting with neighboring countries (ZHONGXIANG ZHANG, 2013). In this respect, "China´s increasingly mercantilist strategy – of wanting to ensure control of oil and gas supplies, and transportation routes risks increasing tension and conflict in a region where the lack of institutions to manage conflicts is already a major problem" (HAYWARD, 2012, p. 30). To DAVID HAYWARD (2012, p. 30), "energy competition is starting to seriously aggravate rivalries between China and its neighbors".

Thirdly, the many activities in which political leaders, diplomats and Chinese businessmen are involved in countries rich in energy resources have sparked concern in the West about the kind of behavior that can be expected from China, as Beijing expands its influence in the world (FRANCO, 2012; JACQUES, 2012). Western policymakers have sought to assess the extent to

which increasing economic, political and, in some cases, military Chinese influence in Asia, Africa, Latin America and Middle East may be harmful towards to Western interests in these regions, because "if Chinese oil diplomacy strengthens ties with oil-producing states", it simultaneously "complicates relations with the oil-importing countries" (HONGYI LAI, 2007, p. 519).

4. The Chinese response to the oil insecurity

With the goal of reducing China's energy insecurity, Beijing has planned a series of measures designed to tackle the problems of lack of availability of oil, and limited reliability of oil supplies. In fact, as the CHINESE WHITE PAPER ON ENERGY (2012, p. 22) states, "China shall endeavor to maintain the stability of the international energy market and energy prices, protect international energy transportation routes, [...] and to cope with the global climate change". In this regard, "the Chinese Government outlined a series of strategies to obtain oil and other energy resources, taking advantage of low prices in the global market" (ZHANG JIAN, 2011, p. 32). On the domestic front, the country has sought new oil reserves, susceptible to offset east China's reserves, mainly the Daqing oil field. After supplying China with approximately "50 million tons of oil annually" for over 27 years, Daqing was unable to maintain that pace, for the first time, in 2003 (PETROCHINA DAQING OIL FIELD, 2009, § 2º). To bridge the gap caused by the decline in the production of Daqing, the Middle Kingdom has gambled on two potentially resource-rich areas: the Tarim River basin (Xinjiang) and the Chinese offshore, which are two areas proven to be rich in oil and gas (U.S. ENERGY INFORMATION ADMINISTRATION, 2012). Under 12th Five-Year Plan (2011-2015), "China plans to invest 40 billion dollars in the development of offshore production, and more than double the production in the Bohai Bay and in the South China Sea" (SKOELD, 2012, § 3º).

China is not known for frequent new oil discoveries, although it has been striving for better performance in that area. With the offshore oil exploration, the country added, in 2011, more than 1.3 billion tons of oil to its reserves, an increase of 20 percent compared to 2010 (FORBES MAGAZINE, 2012). In turn, in 2012, new domestic oil discoveries were made in China, representing an increase of 13 percent over the previous year (THE WALL STREET JOURNAL, 2013). About "85 percent of the oil production capacity of China is located onshore, especially in already developed fields; in recent years, the interior provinces of China, especially Xinjiang Autonomous Region and the central basin of Ordos, have also taken-up considerable attention" (EURASIA REVIEW, 2012, §17º). However, with respect to offshore production, "about 15 percent of extracted oil comes from shallow reserves, especially in the Bohai Bay region, in the South China Sea, essentially the mouth of the Pearl River and to a lesser extent, from the East China Sea" (EURASIA REVIEW, 2012, §20º). In parallel with the investment on diversifying the

sources of external and domestic energy supply, "the Chinese government has consistently been encouraging the construction of strategic oil reserves" in order to "avoid a potential shock to the economy, caused by an interruption in oil supply" (IEA, 2012, p. 3).

The construction of a national strategic oil reserve "is a relatively recent idea to China" (XU YI-CHONG, 2007, p.62). In 1998, the Planning Commission of the State Development identified some possible locations for storage and, a year later, four of them were suggested to the State Council. The proposal to build a national strategic petroleum reserve was confirmed in the 10th Five-Year Plan (2001-2005).

Aiming to strengthen both vectors of reliability, supply and logistics of its oil imports, China relies mainly on the power available to the state and its oil companies (SHAOFENG, 2011). Understanding oil as a rare and strategic commodity, the Chinese government believes that the establishment of "close relationships with the energy producing countries" will provide China with a reliable access to oil sources (GAO YANG, 2012, p.14). Guided by this philosophy, Beijing has actively conducted an "energy diplomacy", based on establishing privileged relations with regions or oil exporting countries (GAO YANG, 2012, p.14). This energy diplomacy can take the form of "strategic partnerships", or "free trade agreements", or providing economic aid, such as "debt relief" (XIAOJUN LI, 2012, p.29). Moreover, it can also take the form of support towards infrastructure construction in countries rich in energy sources, similarly to what has happened in Africa, where Chinese workers have built railways in Nigeria, port facilities in Gabon, among others (HUSE & MUYAKWA, 2008; DUARTE, 2012).

As the CHINESE GOVERNMENT's OFFICIAL WEB PORTAL (2012, §8º) underlines, "China has been able to take advantage of the already established technology, and the relative low cost of labor, to help other developing countries build a series of infrastructure projects in terms of transport, communication, energy supply, among others". Public facilities constructed with support from China include mainly "public infrastructure, wells for water supply, conference centers , cultural venues and facilities for sporting, scientific, educational and medical purposes" (CHINESE GOVERNMENT's OFFICIAL WEB PORTAL, 2012, §9º). Besides the "economic infrastructure and public facilities", it is worth noting that "the Chinese foreign aid projects are oriented towards agriculture, industry, education and health care, focusing on the improvement of industrial and agricultural productivity in the recipient countries, establishing a solid foundation for their economic and social development" (CHINESE GOVERNMENT's OFFICIAL WEB PORTAL, 2012, §3º).

Chinese NOCs spent about "$15 billion on oil and gas acquisitions in 2009" and "more than 26 billion dollars in 2010", in order to diversify their portfolio and profit from the valuation of

assets in the next decade (BARNES *et al*, 2012, §3º). Most investments made in 2010 were directed towards low-risk ventures in South and North America.

Besides the objective of enhancing the reliability of supply sources, the securitisation of the energy resources' transport is also on the top of Chinese policy-makers agendas (ZHANG JIAN, 2011). In November 2003, former President Hu Jintao had stated that "certain major powers" were interested in controlling the [Malacca] Straits, and called for the adoption of "new strategies" to mitigate such "vulnerability" (PINEDA, 2012, § 2º). From then onwards the Chinese press would devote considerable attention to the so called 'Malacca Dilemma', with a newspaper declaring that "it is no exaggeration to say that whoever controls the Strait of Malacca will equally dominate the shipping energy routes to/from China" (PINEDA, 2012, § 2º). In 2010, an article in THE NEW YORK TIMES (2010, §17º) showed China's concern as to whether the strait is "an area of American influence". Therefore, since 2003, in order to prevent the control of the strait by any external power, the Chinese government has strengthened the economic investment in the region, seeking, on the other hand, to maintain good relations both with countries that patrol the sea lanes from the Persian Gulf to the Straits of Malacca, as with the countries located in the Strait (LANTEIGNE, 2008).

On top of Chinese security concerns regarding the Straits of Malacca, there is the danger of oil tankers risking collision, oil spill, kidnapping, piracy and terrorism. The Middle Kingdom seems also to be apprehensive as to whether the U.S. Navy, which acts as a force policing the strait, could choose to block it in case of war with Taiwan. In this sense, the "energy strategy of China" to deal with these threats is based, in part, in the "development of a broad portfolio of energy sources that do not depend excessively on oil from the Middle East, which must transit through the strait of Malacca, or by land pipelines from Central Asia which have to cross vulnerable states like Myanmar and Pakistan" (PINEDA, 2012, p. 3). Such pipelines are intended to meet three major objectives: firstly, "to bring oil and gas from neighboring countries to China via a direct route" (ANDREWS-SPEED, 2012, p.13). Secondly, "to reduce the Chinese dependence on oil imports originating from sea lanes of communication (SLOCs), and therefore their vulnerability to supply interruption" (ANDREWS-SPEED, 2012, p.13). Finally, "in the case of pipelines originating in Myanmar, to reduce dependence on sea lines of South and East Asia, particularly with regard to the Strait of Malacca, through which travels more than half of China's oil imports" (ANDREWS-SPEED, 2012, p.13).

Final remarks

As seen above, while rising power, China shows itself naturally apprehensive vis-à-vis its energy security, more specifically, with regard to the diversification of its energy sources.

In the last decade, the three major Chinese state companies (CNPC, SINOPEC and CNOOC) have signed contracts for oil and liquefied natural gas supply, in the long term, in many countries of Africa, Asia, Latin America and Middle East, invested in important gas and oil pipelines projects, and acquired equity shareholders in oilfields abroad (the so-called 'physical control over oil supplies). In this regard, the essential is to get technology and capital to explore oil abroad.

In practice, the Government encourages Chinese state oil companies to carry out long-term contracts with the oil and natural gas-producing countries, or to get assets in the energy industry. China prefers the way of direct control over resources, rather than being subject to the provision of the international energy market, since in addition to avoid the instability of prices, the direct control of foreign oil and gas, it proves to be a safer strategy than obtaining resources from the international market. The Chinese Government has allowed its oil companies to compete, at the level of investments they perform in foreign markets, in order to promote their efficiency, although it establishes limits to that competition. However, Chinese companies do not have, for now, the technology and management capacity held by Western large oil companies. In fact, Chinese companies have not proved yet to be able to explore the most complex oil and gas deposits of the planet.

The author believes that Chinese oil companies will not be subject to financial limitations, since the savings generated in China will make it possible to channel enough resources towards investment in strategic areas.

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