

China's energy (in)security: an assessment

A insegurança energética chinesa: um Balanço

PAULO AFONSO BRARDO DUARTE¹

Abstract: This article aims to analyze 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.

Keywords: Central Asia; China; Energy Security; Oil.

Resumo: Este artigo tem por objetivo analisar os contornos da (in)segurança energética chinesa, destacando o caso da eletricidade, do carvão e, em particular, do petróleo. O argumento central é que a China enfrenta uma escassez energética significativa, que procura inverter através, por exemplo, da aquisição maciça de petróleo que tem vindo a operar no estrangeiro. De fato, desde 1993 - quando a China se tornou um claro importador de petróleo - os chineses têm investido em uma diplomacia sofisticada do "ouro negro" que lhes permite adquirir mais e mais petróleo para satisfazer as suas necessidades energéticas.

Palavras-chave: Ásia Central; China; Segurança Energética; Petróleo.

Introduction

This article aims to analyze 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, "in 2009, China became the world's second largest oil importer after the United States" (2012, para. 7). However, in 2010, the Middle Kingdom has overtaken the United States, becoming the world's largest energy consumer. As Peng Bin-Win mentions, "China's rise marks a new era in the history of energy" (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

¹ Doutorando na Université Catholique de Louvain, Bélgica. Investigador no Instituto do Oriente, Lisboa. Endereço: Rua do Outeiro, n°18, Adaúfe, 4710-563 Braga, Portugal. E-mail: duartebrardo@gmail.com

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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) predicts that China will be responsible for an increase of over 40% in world oil demand in 2030 (2012). As emphasized by Mikkal Herberg, "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" (2011, para. 5). Therefore, China has become a "key diplomatic actor in most oil and gas exporting regions in the world" (*ibidem*, para. 5).

The contours of China's energy (in)security

McKinsey estimates that "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" (in Wang et al, 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 (*ibidem*, 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" (*Ibidem*, p. 4).

The International Energy Agency (2011) estimates that oil imports will increase at an alarming annual average of about 380 000 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.

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).

Mikkal Herberg and David Zweig estimate that "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" (2010, p. 8). On the other hand, one cannot exclude a possible passage through the Arctic. Interestingly, according to Christina Lin, "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" (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 Gordon Chang 2010, p. para. 1). This claim of 'moral' right to resources and space seems to reflect a certain appetite for *Lebensraum*.

Given the above, Herberg and Zweig believe "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" (2010, p. 8).

The Middle Kingdom has long been able to meet its energy needs through the use of domestic reserves (Hurst, 2007). As Daniel Rosen and Trevor Houser refer, "until 1993, China was a major oil exporter to the East Asian countries" (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, May 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), "China is one of the world's most important producer countries of oil and gas" (2012, p. 3). In 2010, China's oil production exceeded "4 million barrels per day (mb/d)" (*Ibidem*, 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" (*Ibidem*, p. 3). Moreover,

according to the U.S. Energy Information Administration, "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" (2012, para. 4). 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" (Ibidem, para. 4). The International Energy Agency predicts "stabilization, in the long-term, reaching 4.7 million barrels per day in 2035" (2011, para. 6).

According to İdris Demir, "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" (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" as predicted by the 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. According to the U.S. Energy Information Administration: "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" (2012, p. 8). 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" (Ibidem, p. 8). 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. John Lee states that "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" (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 and Sinton, 2011). In turn, Nigeria, Indonesia, Peru, Ecuador, Oman, Colombia, Canada, Yemen, Cameroon, Gabon, Iraq, Azerbaijan and Uzbekistan make up the remaining 20 percent (Ibidem, 2011).

Sabrina Howell believes that "like many other countries which import energy resources, China does not have an overall strategy for energy security" (2009, p. 191). According to Howell, there is, instead, "a centralized policy" that sometimes leads to "competing interest groups, exaggerated rhetoric and initiatives at the provincial level" (Ibidem, 191). Moreover, China pursues a strategy of 'petroleum assets' which besides not providing energy security even aggravates instability. 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. Beijing must realize 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.

In China there are several government agencies that oversee energy policies. However, these agencies are not integrated or hierarchized in terms of political power and have overlapping areas of authority, which has led to intense rivalry and inefficient management (Best and 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" (Ibidem, 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, para. 1). 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" (Ibidem, para. 1). The NDRC is "a department of the State Council of China, the highest organ of executive power in the country" (Ibidem, para. 1). 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 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" (2004, p.56). As emphasized by Sabrina Howell, "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" (2009, p. 191). It should be emphasized 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" (Reuters 2012, para. 20). Currently, there is a recognized 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 May 18 2012, para. 18). 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 May 18 2012, para. 1).

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). As Brian Spegele and Wayne Ma underline, "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, para. 19).

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). According to the BP Statistical Review of World Energy, at the rate of current production and exploration, Chinese oil reserves will last only about 10 years (June 2012). Based on a historical analysis of oil consumption in China, from 1980 to 2008, Haibo Wang notes that "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" (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 us the assurance that it will continue to import more and more oil. One concerns the rapid urbanization, which requires higher power consumption (O'Neill *et al*, 2012). At the current rate, the urbanization 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" (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*, "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" (2013, p. 4). In practice, the growth of this city population requires increased energy consumption, particularly in the transport sector

(Johnson, 2013) which will lead to China importing more oil (Roland Berger Strategy Consultants, 2011).

Another factor linked to the Chinese oil insecurity, and that tells us 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 and 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 and Details 2012, para. 45).

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", according to CNN Money (2012, p.8) – which starts opting for air transport, while simultaneously fascinated by cars (The Guardian, 2012; Wang, 2010). Indeed, according to the Economist Intelligence Unit (2013), 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. 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 and Supply Outlook*, indicates that (there) in 2035 there will be "343 vehicles per 1000 people, as opposed to 58 per 1000 people in 2010" (2013, p. 42). 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" (Ibidem, 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" (Ibidem, 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" (Ibidem, 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, according to John Lee, "China's energy security can be defined as the attempt to ensure the reliability of the external supplies of oil at stable prices" (2012, p.77).

Dan Blumenthal (2005) informs that "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". 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. 698). 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, according to Mikkal Herberg, why "the Chinese state oil companies are so committed to acquire assets in West Africa, Latin America, Central Asia and Southeast Asia" (Testimony before the US-China Economic and Security Review Commission 2012, para. 5). However, as Zhongxiang Zhang notes, "under the expansion of its activities abroad, the Chinese state oil companies overestimate the probability of a possible disruption of oil supplies" (2012, p. 699). This

explains why it is therefore important to consider the question of the reliability of the oil supply from its source of origin. According to Chen Shaofeng, "reliability is defined as the level of exposure to various risks to which China's energy supply are subject (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, as Chen Shaofeng mentions, "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" (Ibidem, p.617). The major international oil companies are often "subject to repeated incidents of kidnapping and murder of their workers in local oil fields" (Ibidem, 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) .

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