



China's Petroleum Predicament:

Challenges and opportunities in Beijing's search for energy security

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Introduction

If China's rise is one of the most important stories of this new century, China's growing appetite for energy is one of its most striking subplots. Between 2000 and 2009, China's energy consumption more than doubled as its economic growth went into overdrive. By one estimate, China accounted for 63 per cent of the world's new energy demand during that period (BP 2010:40). China now consumes 47 per cent of the world's coal, 19 per cent of its hydroelectric power, and 10 per cent of its oil (BP 2010:38). In 2009, according to the International Energy Agency (IEA), China surpassed the United States as the world's largest energy consumer (IEA 2010b:602).

China's soaring appetite for energy has sparked growing concern amongst its rulers and intellectual elite about the country's 'energy security'—traditionally defined as the ability of a country to procure sufficient, affordable and reliable energy supplies (IEA 2007:160). Indeed, whereas the *People's Daily* mentioned 'energy security' (*nengyuan anquan*) only once in the year 2000, the paper published 476 different articles using the term between 2008 and 2010.¹ For many Chinese observers, China's biggest problem in this regard is its mounting reliance on energy imports and the external vulnerability that these imports imply. Others take a less traditional view and highlight China's domestic energy challenges, especially the unreliability of its power sector and the environmental costs imposed by its heavy reliance on coal. In both cases, the concern is that energy represents a growing challenge that China must confront (Kennedy 2010).

This chapter focuses on China's search for energy security with respect to oil in particular. While coal remains the dominant energy source for China, oil poses a unique challenge for the country. Indeed, China remains far more dependent on the outside world for oil than for any other energy source. In 2009, China imported less than 4 per cent of its natural gas, but 53 per cent of its oil (BP 2010:24, 27; IEA 2010b:135). Both of these figures are set to rise in the decades ahead, but China will remain more dependent on imports for oil than for natural gas for the foreseeable future, especially since China appears to possess substantial shale-gas reserves. There are also a number of alternatives to natural gas, which is typically used for chemical feedstock and power generation. In contrast, there is no ready substitute for oil as a transport fuel, notwithstanding growing interest in alternative-fuel vehicles within China. As its oil imports grow, China is therefore becoming increasingly dependent on the outside world for a crucial resource.

The following analysis begins by documenting the dimensions of China's 'petroleum predicament' in more detail, outlining the future trajectory of China's demand for oil and noting the Government's limited ability to control this demand. It then evaluates the way in which the Chinese Government has sought to enhance its energy security as its oil imports have grown. While the Government has certainly taken the challenge seriously, the policies adopted thus far have focused primarily on unilateral efforts to build up its own capabilities and bilateral deals with energy-producing states. As discussed below, some of these policies have not meaningfully enhanced China's energy security, while others have limitations or remain insufficiently developed. The chapter concludes by noting that China needs to develop stronger multilateral cooperation with other prominent oil importers to enhance its energy security more substantially in the future.

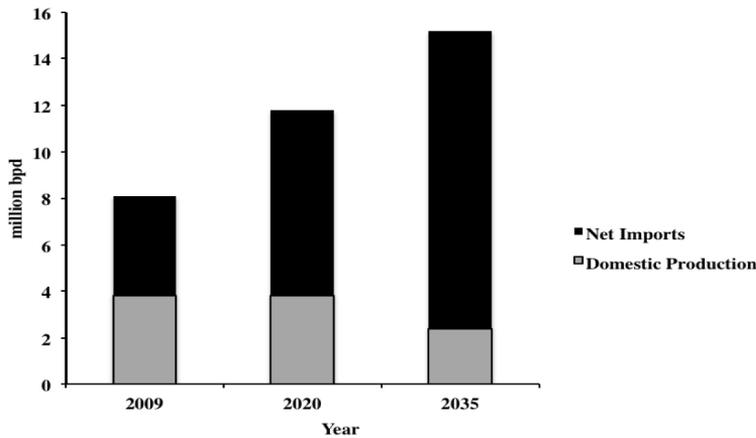
China's petroleum predicament

China's appetite for oil is soaring. Whereas in 2000 China consumed 4.8 million barrels per day (bpd), by 2009 that figure had jumped to 8.6 million bpd (BP 2010:11). The IEA projects that by 2035, China's demand will exceed 15 million bpd, making it the largest oil consumer in the world (IEA 2010b:105).

China's growing thirst for oil reflects first and foremost the dramatic growth of its transportation sector. China's automobile market emerged as the largest in the world in 2009, with total vehicle sales reaching 13.6 million, and in 2010 the total surpassed 18 million ('China 2010 auto sales reach 18 million, extend lead', *Bloomberg*, 10 January 2011, <<http://www.bloomberg.com/news/2011-01-10/china-2010-auto-sales-reach-18-million-extend-lead-update1-.html>>; 'China car sales top U.S.', *Reuters*, 11 January 2010, <<http://www.reuters.com/article/2010/01/11/us-autos-idUSTRE60A1BQ20100111>>). Air travel has become much more popular, too, with total flights by domestic carriers nearly doubling to 1.75 million between 2003 and 2009 (Liang et al. 2010). Looking ahead, the IEA expects transport-related oil demand in China to triple between 2008 and 2035 as more and more Chinese acquire their own cars and air travel becomes more popular. If so, transportation will account for 64 per cent of China's oil demand by 2035—up from 40 per cent in 2008 and 25 per cent in 1990 (IEA 2010b:670).

China's growing demand for oil and its stagnating domestic production mean that its oil imports will continue to soar in the decades ahead. In 2009, China imported 4.3 million bpd, or 53 per cent of its supply (Figure 8.1). The IEA projects that by 2035, China will import nearly 12.8 million bpd, or 84 per cent of its supply (IEA 2010b:135). China will thus be even more exposed to the risk of international supply disruptions than it is today. The imports will also be costly. If oil costs US\$113 a barrel in 2035, as the IEA predicts, China's oil imports will cost the country more than US\$525 billion (IEA 2010b:101).

Figure 8.1 China's future oil supply: domestic versus imported



Source: International Energy Agency, *World Energy Outlook 2010*.

To be sure, the Chinese Government is working hard to control the growth of its demand for oil, and thus its demand for oil imports. Starting in 2004, for example, China began adopting some of the world's toughest fuel economy standards, exceeded only by those of Europe and Japan (Oliver et al. 2009). In 2010, Beijing made alternative-fuel vehicles one of seven 'strategic industries' targeted for rapid growth before 2015 ('China sets growth goal for new strategic industries', *China Daily*, 19 October 2010, <http://www.chinadaily.com.cn/business/2010-10/19/content_11427572.htm>). The electric-vehicle (EV) industry in China is already making progress, in fact, and government officials hope to produce one million EVs annually by 2020 (Fang and Wong 2010). The rapid rolling out of high-speed rail will also serve to constrain the country's growing thirst for oil.

Nonetheless, while these are all important steps, for the foreseeable future they will not reduce China's growing dependence on imported energy, but merely limit how rapidly it grows. In fact, even if China succeeds in rapidly deploying electric vehicles after 2015, it would still depend on imports to meet two-thirds of its crude-oil demand in 2030, according to McKinsey and Company (2009:79). While that is less than the 80–90 per cent import dependence that China's leaders fear, it is still higher than today's level. In addition, it should be noted that the Chinese Government is not doing all that it could to constrain the country's oil demand. While China now takes a more flexible approach to setting fuel prices than it has in the past, they remain regulated by the Central Government to mitigate the impact on inflation. Indeed, authority over energy prices continues to rest with the National Development and Reform Commission (NDRC), an organisation charged with macroeconomic management and inflation control rather than energy reform. The National Energy Administration (NEA), in contrast, remains poorly staffed, and it is unclear if or when the organisation will be elevated to ministerial status and whether it will gain greater authority over energy prices in the future (Downs 2010:182–4).

In short, China is destined to rely more and more on the outside world for oil in the coming decades, notwithstanding its considerable efforts to control domestic demand. For that reason, China's leaders are pursuing a variety of supply-side policies to ensure their country's access to oil supplies in the future, as discussed in the next section.

China's struggle for oil security

China's supply-side policies to address its growing dependence on imported oil make an impressively broad list. They include efforts to support the international expansion of its own national oil companies (NOCs), to diversify its sources of supply, to strengthen its naval capabilities, and to develop its own strategic petroleum reserve (SPR). The following discussion considers each of these initiatives in turn.

The NOCs go out

For more than a decade, the Chinese Government has encouraged its NOCs and other state-owned enterprises (SOEs) to 'go out'—to invest overseas and gain greater access to resources abroad. The NOCs themselves were already eager to go abroad to expand their reserves and increase profits. The China National Petroleum Corporation (CNPC), for example, had been looking for opportunities to invest overseas as early as the late 1980s, particularly as domestic opportunities began to look comparatively meagre. The Government's subsequent support for the NOCs' international expansion emerged in the late 1990s as the Government sought to transform some of its SOEs into internationally competitive corporations. Government support also developed as the country was becoming increasingly dependent on imported oil; it was believed that oil produced by Chinese companies abroad would be a more secure source of supply than that purchased on international markets (Downs 2006:35–9).

The NOCs have sought to make the most of the Chinese Government's support over the past decade. Foreign investments have been made not only by the three major NOCs—CNPC, the China Petroleum & Chemical Corporation (Sinopec), and the China National Offshore Oil Corporation (CNOOC)—but also by smaller energy players such as Sinochem and CITIC Energy. Overall, Chinese companies were involved in 43 separate foreign oil and gas acquisition deals between 2002 and 2010—deals that were worth roughly US\$65 billion.² As a result, the NOCs now operate in 31 different countries around the world. They have equity production in 20 of those countries, though most of it is concentrated in Kazakhstan, Venezuela, Sudan and Angola. By the first quarter of 2010, the NOCs' overseas equity shares had reached 1.36 million bpd—nearly one-third of China's net imports for 2009 (Jiang and Sinton 2011:17, 39–40).

The question remains: how much has the NOCs' international expansion actually enhanced China's energy security? NOC investments have certainly supported the expansion of oil production worldwide over the past decade, even as oil markets have tightened and prices have increased. In that sense, the investments of the NOCs have enhanced not only China's energy security, but that of other major oil consumers as well. Yet the contribution of these investments to global production is limited. As noted above, the NOCs' overseas equity production reached 1.36 million bpd in early 2010, but global crude-oil production in 2009 was just less than 68 million bpd (IEA 2010b:119).

It is unclear whether besides making a small contribution to the expansion of global supply, the NOCs 'going out' strategy has improved China's energy security. It has been shown, for example, that the NOCs do not necessarily send the oil they produce overseas back to China. Instead, the NOCs apparently prefer to let market considerations dictate where it is sold. China's equity production in Venezuela, for example, has not

been shipped back to China, not only because of the distance involved but also because Venezuelan crude has not in the past been compatible with Chinese refining capabilities. Some of CNPC's equity production in Kazakhstan is also being sold on the international market. And while oil exports from Sudan and Angola to China are considerable, it remains unclear how much of the NOCs' production in these countries is actually shipped back to China (Jiang and Sinton 2011:18–19).

Nor is it reasonable to assume that oil produced by the NOCs would somehow be cheaper or more available to China in a supply crisis. Physical disruptions that impede the flow of oil to China will affect foreign and Chinese firms alike, and the NOCs have shown little inclination to grant Chinese customers a discount when prices are high. In fact, the NOCs responded to rising crude prices prior to 2008 by *reducing* supplies of refined products to the Chinese market, resulting in widespread shortages at the pump, since price controls did not allow them to pass their rising costs on to customers (Downs 2010:184). The autonomy the NOCs exhibited in this case underscores the Government's limited ability to control their activities—a limitation that reflects both the NOCs privileged political status and the weakness of China's governance capacity in this sphere (Downs 2006:16–24). Today, some senior Chinese officials appreciate that the NOCs are motivated more by profit than by patriotism, and that the expansion of their assets overseas does not necessarily enhance China's energy security (Bradsher 2010).

There is even concern that the NOCs' international expansion might actually detract from China's welfare and security. Some analysts have charged that the NOCs routinely overpay for equity stakes in foreign oil fields, thanks to generous financial support from the Chinese Government. If so, their expansion could be seen as enriching the oil companies at the expense of national welfare. Recent analyses, however, suggest that this accusation might not be well founded. The scholar Bo Kong (2010:92), for example, has argued that cases of overpayment seem to have taken place only in the early stages of the NOCs' international expansion, when they were comparatively inexperienced. More recent research by Julie Jiang and Jonathan Sinton (2011:17) has uncovered no evidence of systematic or intentional overpayment.

A more compelling charge against the NOCs is that their international expansion has caused China to become entangled with 'pariah' states and thereby complicated its relations with the United States and Europe. Several years ago China's close relations with Sudan—intended to support CNPC's activities in the country—led Western critics to dub the 2008 Olympics in Beijing 'the Genocide Olympics' (Economy and Segal 2008). The criticism evidently stung: China subsequently made a greater effort to support international efforts to address the crisis in Sudan. More recently, the NOCs' continuing interest and activities in Iran have raised the prospect that the United States will impose sanctions on Chinese firms. The NOCs might calculate that they have more to gain from investing in Iran than they stand to lose from American sanctions, and they might lobby the Chinese Government to support them accordingly (Downs and Maloney 2011). Yet with Beijing already working to limit the deterioration of Sino–American relations over issues ranging from currency values and maritime disputes to North Korea, it is hard to believe that greater tension over Iran would be in China's national interest.

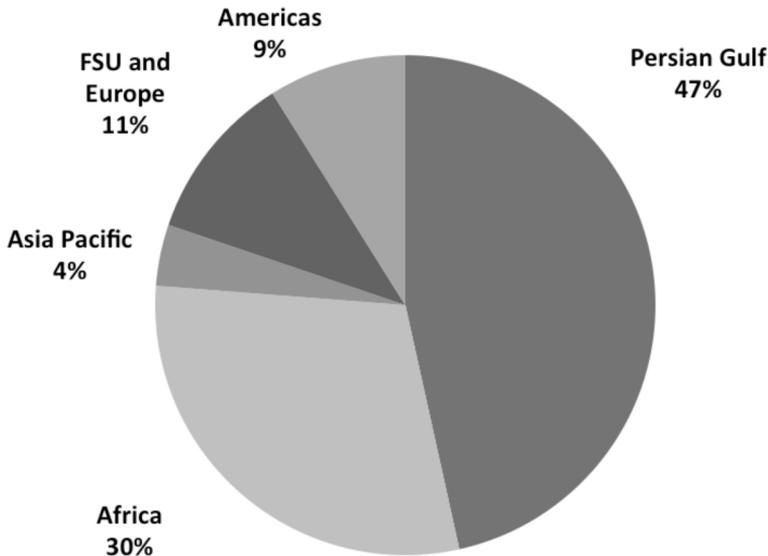
On balance, the NOCs 'going out' does not seem to have enhanced China's energy security to any great extent. While it has made a marginal contribution to the global production of crude oil, it does not guarantee greater flows of that oil to China, and it does not mean that oil will be more available to China in a supply crisis. On the other hand, while suggestions that the NOCs are impoverishing China by overpaying for assets are probably going too far, there is evidence that the NOCs are complicating China's foreign relations. In short, the NOCs' expansion is a positive development for the companies themselves, but it is far from clear that this is the case for China as a whole.

Diversifying sources of supply

Winston Churchill once famously observed that 'safety and certainty in oil lie in variety and variety alone' (quoted in Yergin 2006:69). China has certainly sought to heed this advice over the past two decades. In 1995, China relied on just two regions—the Persian Gulf and the Asia-Pacific—for 88 per cent of its crude-oil imports (Downs 2006:31). Within the Asia-Pacific, China was supplied mainly by Indonesia, which alone accounted for nearly one-third of China's total imports. By 2005, China had significantly diversified its import mix. That year, African countries accounted for 31 per cent of China's imports, and China also imported significant quantities from the Americas and the former Soviet Union, with Russia supplying 10 per cent of China's imports (Downs 2006:31). Nonetheless, China's gains were limited. China remained just as reliant on the Middle East in 2005 as it had been 10 years before, with 46 per cent of its imports coming from the Persian Gulf. In addition, because China was now heavily reliant on Africa as well as the Middle East, it was now more dependent on a single chokepoint—the Strait of Malacca—than it had been before, with nearly 80 per cent of its oil imports flowing through the Strait. As of 2010, this situation still obtained: China still imported 77 per cent of its crude from Africa and the Persian Gulf (Figure 8.2).

It is against this backdrop that China has sought to further diversify its energy import mix through a series of 'loan for oil' and 'loan for gas' deals in the past few years. In particular, in the midst of global financial distress, Chinese state-owned banks made loans worth US\$77 billion to nine different oil and gas-producing countries—all of which are located outside the Middle East—in 2009 and 2010 (Jiang and Sinton 2011:41). In return, China's NOCs were able to conclude a series of agreements with these countries and expand their international business. The deal with Russia promised to supply China with 300 000 bpd over 20 years through a new pipeline system, which began making commercial deliveries on 1 January 2011. The agreement with Brazil, meanwhile, promised China 150 000 bpd in 2009 and 200 000 bpd from 2010 to 2019. Agreements reached with Venezuela appear to have arranged Chinese purchases of up to 450 000 bpd between 2010 and 2020. In each of these cases, China will pay market prices for the oil it buys (Downs 2011:39–53).

Figure 8.2 China's crude-oil imports by region, 2010



Note: The figures do not sum to 100 per cent due to rounding.

Source: Lin F. 2011, *Xinhua China Oil, Gas & Petrochemicals* (OGP).

These 'loan for oil' deals might be seen as further enhancing China's energy security by establishing new supply relationships. The new pipeline with Russia is particularly noteworthy in this regard. Russia could previously ship 200 000 bpd to China by rail, and the pipeline will add an additional 300 000 bpd of capacity. Nonetheless, even if plans to expand the pipeline to 600 000 bpd capacity are completed, it would provide only 7.5 per cent of China's projected imports in 2020 if it functioned at full capacity (IEA 2010b:135). Russia is thus not going to replace the Persian Gulf as China's primary oil supplier in the foreseeable future. Russia's reliability as an energy supplier is also open to question—a point ruefully noted by some Chinese analysts (Zhao 2007:41). And while China is also reaching out to Venezuela and Brazil, and is now constructing a refinery so that it can process Venezuelan crude, it remains unclear how much oil will be shipped from the Americas to China given the distance involved.

China's recent 'loan for oil' deals thus have only limited potential to further diversify its import mix away from its main suppliers today. Perhaps in recognition of this fact, Beijing has also sought to diversify the route its oil shipments take as they wend their way towards China from the Middle East and Africa. In 2009, CNPC signed a memorandum of understanding with Myanmar to construct parallel oil and gas pipelines that would connect the Chinese Province of Yunnan with the Indian Ocean. The oil pipeline in particular will allow a portion of China's crude shipments to bypass the Malacca Strait on their way to China, while also saving 1200 km of travel distance (Jiang and Sinton 2011:34). Yet the 440 000 bpd capacity of the oil pipeline could have carried only 14 per cent of China's imports from Africa and the Middle East had it been operational in 2009—and that fraction is destined to shrink as China's oil imports continue to grow in the future. China also appears to be involved in developing rail and road infrastructure that will connect

Pakistani ports on the Arabian Sea with western China, prompting speculation that China is developing an even closer connection with the Persian Gulf (Harrison 2010). Yet as far as transporting oil is concerned, this connection will be even more constrained than the pipeline through Myanmar (Erickson 2010). Estimates suggest that the rail system would be able to carry only 175 000 bpd, assuming it was to be completely dedicated to oil transport. It would also be much more costly to transport oil in this manner, making it economically uncompetitive, and the rail link will transit mountainous terrain that is vulnerable to avalanches, flooding, seismic activity, and insurgency. Building a pipeline along this route would be problematic as well, due to both economic and security considerations (Erickson and Collins 2010:101–3).

In sum, while China has succeeded in diversifying its supply portfolio to some degree since the 1990s, the country will continue to rely on the Persian Gulf and Africa for a high percentage of its oil imports in the years to come. Most of these imports, in turn, will travel to China entirely by sea, given the paucity of alternative options. In this context, it is not surprising that China is thinking more and more about ways to secure its seaborne shipments of oil.

Protecting supply lines

China's growing reliance on seaborne oil imports has raised a variety of concerns about the security of the sea lines of communication (SLOC) through which its oil shipments flow. Oil tankers might become targets for pirates or terrorists, particularly when forced to transit narrow choke-points. Chinese analysts also worry that the US Navy, in conjunction with allied forces, could cut off seaborne oil shipments to China in the event of a military conflict over Taiwan. There is particular concern about China's imports from the Middle East and Africa, given the country's heavy reliance on these regions and the fact that shipments from them must traverse the narrow Malacca Strait. The phrase 'the Malacca Dilemma' has emerged in China to connote both China's heavy reliance on the Strait and the fact that this reliance poses distinct security challenges for China at the same time.

The above concerns, in combination with China's growing dependence on maritime trade more generally, have helped to motivate China's interest in developing its own blue-water navy in recent years. While to date the modernisation of the People's Liberation Army Navy (PLAN) has focused on submarine capabilities and area denial missions around China's periphery, attention has shifted in recent years to operations further afield. In an indication of this emerging interest, China is rapidly restoring the *Varyag*, a Soviet aircraft carrier purchased in 1998 that could be used for training purposes as well as a model for a future ship. Analysts now project that the PLAN could build its own 50 000–60 000-tonne conventional carrier by the middle of this decade and a nuclear-powered carrier by 2020 (Collins and Erickson 2011). Chinese military officials and analysts are also actively discussing the kind of overseas support network that the PLAN would need to support operations far from China's shores (Chase and Erickson 2009:8–11). Military and security officials have also become more directly involved in energy policy making in China in recent years. The 21 members of China's National Energy Commission (NEC), for example, include both the Deputy Chairman of the military's General Staff and the Minister of State Security (Bradsher 2010).

To what degree would the development of a blue-water navy enhance China's energy security? A robust force that would allow China to challenge the United States for sea control would provide the country with the means to counter an American-led blockade. Such capabilities would take a long time to develop, however, and they would be quite costly as well. Nor would it be money well spent, since the threat of an American blockade is largely a chimera. The United States would be highly unlikely to attempt such a blockade, since the ensuing disruption of the Chinese economy would inevitably have repercussions for the American economy as well. The United States would not be pressuring China so much as engaging in 'mutually assured economic destruction', given the growing interdependence of the two economies. Even if the United States were to attempt a blockade of China, it would probably not be very successful (Collins and Murray 2008). If the blockade were implemented far from China's shores—around the Malacca Strait, for instance—it would be extremely difficult to differentiate oil bound for China from that bound for other countries, including Japan and South Korea. A given tanker might carry oil bound for several countries, and ownership of the oil within a tanker can easily change during the course of its journey. If the blockade operations were undertaken close to China, in contrast, blockading vessels would be vulnerable to attacks from Chinese submarines and land-based forces. Taking these points together, the chances that the United States and its allies would both attempt to impose an oil blockade against China and largely succeed in this endeavour are vanishingly small.³

In contrast, a more modest naval force focused on more limited missions would arguably be more useful from the standpoint of China's energy security. Although it would not allow the PLAN to compete with the US Navy, it would allow China to support international efforts to combat piracy and terrorism around major shipping lanes. In fact, the PLAN has recently begun to support such efforts—notably by participating in the multinational initiative to combat piracy off the coast of Somalia since late 2008. In February 2011, the Chinese Government proudly claimed that PLAN vessels had escorted more than 3400 Chinese and foreign ships through these waters, while also rescuing 33 ships from pirate attacks ('Latest Chinese naval escort fleet leaves for Somali waters', *People's Daily Online*, 22 February 2011, <english.peopledaily.com.cn/90001/90776/90883/7295227.html>). To be sure, naval patrols are only part of the solution to this problem; equally important are measures that shippers are taking to protect themselves and long-term efforts to establish political order within Somalia. Even so, there is an acute need for greater naval patrolling at present, since the area afflicted by piracy off the coast of East Africa is now the size of Western Europe ('No stopping them: for all the efforts to combat it, Somali piracy is posing an ever greater threat to the world's shipping', *The Economist*, 3 February 2011, <www.economist.com/node/18061574?story_id=18061574&fsrc=rss>). There is thus an opportunity for China to play a greater role in such efforts in the future.

In short, the extent to which China's emerging naval capabilities augment the country's energy security in the future depends on the kind of force that is developed and the types of missions that it undertakes. Mounting a naval challenge against the United States would be quite costly, would alienate other Asian countries, and would not address a threat that is

likely to materialise. Focusing on more limited capabilities, in contrast, would allow China to build on its recent participation in multinational anti-piracy efforts and, in doing so, address a real challenge that both China and the international community face today.

Building a domestic reserve system

China is also actively building its own strategic petroleum reserve (SPR) to bolster its energy security. The construction is proceeding in three stages ('Factbox: China's strategic oil reserve plan', *Reuters*, 20 January 2011). The first phase, which has already been completed, reportedly holds 102 million barrels—enough for about 24 days of net import requirements at 2009 levels. The second phase is currently being filled and will reportedly expand China's holdings by another 170 million barrels. The third phase, which is scheduled to be completed by 2020, will expand China's SPR to approximately 500 million barrels. That would cover 116 days of oil imports at 2009 levels, but only 63 days of imports at levels projected for 2020. China's oil companies also have their own commercial reserves, in addition to the SPR. Chinese media reported in March of this year that these held another 168 million barrels, but the figure remains unverified (Zhou and Shen 2011).

China's investment in its SPR system has the potential to make a significant contribution to the country's energy security. The SPR will provide Beijing with new policy options in the event that its supply of oil imports is disrupted in the future—and it is clear that this is a real danger. The world has seen 10 major oil-supply disruptions since the mid-1950s, and four of these occurred between 2001 and 2010 (IEA 2010a:11). In 2011, political unrest in the Middle East has further underscored the danger of supply disruptions and prompted prices to jump in response. In short, while the cost of constructing a reserve system is considerable, China's SPR is a worthwhile investment.

Nonetheless, China's SPR will be a much more effective instrument if it is used in coordination with the reserve systems of other countries. International Energy Agency members are required to maintain stocks that can meet at least 90 days of net import demand and, at the end of 2009, total stocks in the organisation's members stood at 4.2 billion barrels (IEA 2010a:7). In the event of future supply crises, Beijing is likely to find itself drawing on its own reserves at the same time that other major importers are drawing on theirs, since supply disruptions are far more likely to affect many countries at once than just China alone. Should China's actions fail to be coordinated with those of other countries, or should China's response be insufficiently transparent, oil traders are more likely to be confused than reassured, and instability in the markets will persist. It is thus important that Beijing develop more robust cooperation with other major oil importers—a point considered in more detail below.

The opportunity for greater multilateralism

To date, China has focused primarily on unilateral and bilateral measures to enhance its energy security. It has encouraged its oil companies to invest overseas, developed relationships with new suppliers, looked to develop a blue-water navy, and begun to construct its own oil reserve system. The preceding discussion makes clear that these measures—by themselves—have limited potential to alleviate China's 'petroleum

predicament' significantly. In the future, China should develop a more well-rounded approach by investing more in multilateral initiatives. The following discussion focuses on the possibility of greater coordination with the IEA in particular.

Since the 1970s, the IEA has been the primary mechanism through which major oil importers coordinate their responses to supply disruptions. In the event of a crisis, the organisation allows member countries to coordinate efforts to restrain demand and to bring additional supplies to the market through the release of reserve stocks (IEA 2010a:6).⁴ With China emerging as the world's second-largest oil consumer, as well as its second-largest importer, it would seem only natural that the organisation now includes China as a member. Nonetheless, while China has taken part in a number of IEA meetings in recent years as a 'major dialogue partner', it remains outside the organisation.

There are several attributes of the IEA that make it difficult for China to become a member. First, the agreement establishing the IEA in 1974 envisioned the group's members being drawn from the Organisation for Economic Cooperation and Development (OECD). China is not an OECD country, and is not about to become one in the next few years, so this would seem to preclude Chinese membership. Nonetheless, the United States has signalled that it is prepared to open the doors to China in the interest of maintaining the institution's relevance; in late 2008, the Bush administration expressed its support for China joining the IEA, and the Obama administration has made it clear that it would welcome Chinese membership as well ('Hearing of the Senate Foreign Relations Committee; subject: the nomination of Kurt Campbell to be Assistant Secretary of State for East Asian and Pacific Affairs', *Federal News Service*, 9 June 2010; Kennedy 2010:141). China's lack of OECD membership should thus not be seen as an insuperable obstacle, but a complication to be managed. Second, China's oil reserves do not yet meet IEA standards, which as noted above require members to maintain stocks that can meet at least 90 days of net import demand. Yet China is probably not too far from meeting this requirement, if one includes both its growing SPR and its industry stocks; in 2009, IEA Director, Nobuo Tanaka, estimated that China's total reserves could meet 86 days of net imports ('China close to IEA membership', *Oil & Gas News*, 19 July 2009).⁵ Lastly, there is the question of whether the IEA's Governing Board can reform its voting structure in a way that satisfies both its 27 existing members and its potential members, which could include not just China but also India and Russia (Colgan 2009:8–9). While this is a nettlesome issue, it does not preclude China from pursuing membership by making clear the reforms that it would like to see implemented if it were to join.

Perhaps the most fundamental obstacle to China becoming an IEA member is Beijing's own hesitation about joining the organisation. Chinese officials reportedly worry that joining the IEA would undermine its freedom to use its SPR as it saw fit, and there is also concern about the degree of transparency the IEA would require.⁶ Yet it should be possible to reassure Beijing on these points. First, while the IEA Governing Board in theory has the ability to make legally binding decisions by majority vote, in practice, it is a means of facilitating agreements among its members, and decisions by consensus are the norm (Keohane 1984:217–40; Scott 1994:184–8). Moreover, the IEA has no ability to actually enforce its decisions, so it is unclear how it could make China comply with a decision that Beijing did not support. Second, while joining the IEA would impose new reporting requirements on China, increasing the transparency of its energy sector would reduce

uncertainty and thus a potential source of volatility in international markets. Indeed, even some Chinese experts have begun to argue that China ought to join the IEA. In their view, it would not only improve international cooperation between major energy consumers, but also strengthen China's voice in the energy arena and reassure other states about China's impact on energy markets and institutions as it rises (Wang 2009; Zhao 2008).

In the short term, of course, full Chinese membership in the IEA might be too ambitious a goal. The difficulty of reforming the IEA to admit China, combined with China's hesitation about joining the organisation, is a significant obstacle that will not be overcome overnight. Nonetheless, China and the IEA need to develop a closer relationship if they are to cooperate effectively in the future. One possibility is that China could deepen its consultation with the IEA—sharing more information and developing communication mechanisms to be used in emergencies—without formally joining the organisation (Colgan 2009:12). This would be a positive step, and it would help to reduce confusion in a supply crisis. Yet it would not give China a voice inside the institution, and it would be less reassuring to the world about China's trajectory and intentions in the energy sphere than full membership would be. For these reasons, China's long-term goal ought to be full membership in the IEA.

Conclusion

China's policies to address its 'petroleum predicament' in recent years range from the largely ineffective to the insufficiently developed. Beijing's support for the international expansion of China's NOCs is arguably the least productive of its policies; it might be good for the companies themselves, but it does little to enhance national energy security. China's attempts to diversify the regional sources of its oil imports represent a more effective means of pursuing energy security, and Beijing has had some success in this regard. Even so, the country will remain highly dependent on imports from the Middle East and Africa—and on transportation through the Malacca Strait—for years to come. This raises the question of how these shipments will be protected. China's efforts to develop blue-water naval capabilities could enable it to protect its oil shipments against such threats as piracy and terrorism more effectively, particularly in collaboration with other countries. For the moment, however, it remains unclear whether Beijing is interested mainly in these types of missions or in the more dubious proposition of competing with the United States and its allies for sea control. Lastly, China's development of its own SPR system is an important and necessary step, one that will give it new options in the event of future supply crises. Yet Beijing will need to coordinate more effectively with other major oil importers in the future if it is to use its reserve system effectively.

This last point raises a broader issue concerning how China pursues energy security. As argued in the preceding pages, China has thus far emphasised unilateral and bilateral measures to reduce its vulnerability to oil-supply shocks. Pursuing greater coordination with other oil importers—and, in particular, with the IEA—would allow China to develop the multilateral side of its approach to energy security. In the short term, China could deepen its level of consultation with the IEA and make its energy sector more transparent. In the longer term, China could seek membership in the organisation. Such multilateral engagement would provide Beijing with more information and greater influence in the event

of future supply shocks—a danger that appears all too real in light of recent events. More broadly, greater multilateral engagement would demonstrate that Beijing is looking for ways to cooperate with the international community as the story of China's rise continues to unfold.

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Endnotes

1. *Renmin Ribao Electronic Database*, accessed through The Australian National University Library's electronic resource system.
2. Note this total refers to the investments themselves; it does not include related transactions concluded to facilitate the investments, such as some of the loans made by Chinese banks to oil-producing countries in recent years. The 'loan for oil' deals are discussed in the next section.
3. Note that some Chinese analysts appreciate the difficulties that the United States would have. See Zhao (2007:36–8).
4. The IEA also allows for the coordination of fuel-switching and surge production in the event of a crisis, but these mechanisms are less viable now than in the past.
5. Note that Chinese officials subsequently disputed Tanaka's estimate as too high. See 'Chinese official denies 86 days oil reserve claim by IEA', *Asia Pulse*, 6 July 2009.
6. This point is based on the author's interviews with energy specialists at Chinese state-owned think tanks in Beijing, March 2009.

