International Energy Agency

OVERSEAS INVESTMENTS BY CHINESE NATIONAL OIL COMPANIES

Assessing the drivers and impacts

INFORMATION PAPER

Julie Jiang and Jonathan Sinton

2011 February

OVERSEAS INVESTMENTS BY CHINESE NATIONAL OIL COMPANIES

Assessing the drivers and impacts

INFORMATION PAPER

Julie Jiang and Jonathan Sinton

This information paper was prepared for the Standing Group for Global Energy Dialogue of the International Energy Agency (IEA) in September 2010. It was drafted by Julie Jiang and Jonathan Sinton, Division for Asia, Latin America and sub-Saharan Africa (DALSA), IEA. This paper reflects the views of the IEA Secretariat, but does not necessarily reflect those of individual IEA member countries. For further information, please contact Ms. Jiang at: ***julie.jiang@iea.org***

2011 February

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 28 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

IEA member countries:

Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Korea (Republic of)
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States

The European Commission also participates in the work of the IEA.

International Energy Agency

International Energy Agency
9 rue de la Fédération
75739 Paris Cedex 15, France

www.iea.org

Table of Contents

List of figures

List of tables

Acknowledgements

The authors would like to thank their colleagues at the IEA for advice, contributions, and reviews throughout the preparation of this paper. David Fyfe was instrumental in designing the research questions and approach, and his team, particularly Julius Walker and Diane Munro, provided essential data and technical support. Anne-Sophie Corbeau provided technical support on gas. Support and direction was generously given throughout by Richard Jones, Ulrich Benterbusch, Didier Houssin, Osamu Yamanaka, Doug Cooke, and Ann Eggington. Other colleagues whose contributions were essential include Toril Bosoni, Andrew Wilson, Eduardo Lopez, Esther Ha, Ian Cronshaw, Akihiro Tonai, Brett Jacobs, Tim Gould, Isabel Murray, Christopher Segar, Ghislaine Kieffer, Sun-Joo Ahn, Sally Wilkinson, Daniela Niethammer, William Alleix, Dennis Best, Julie Calvert, Michael Chen, John Corben and Pawel Olejarnik. Rebecca Gaghen and her team helped design, edit and publish this paper: Bertrand Sadin and Corinne Hayworth, who designed the maps and the cover page, Marilyn Smith, Muriel Custodio, Anne Mayne, Delphine Grandrieux and Madeleine Barry.

We are also grateful to numerous colleagues outside the IEA who contributed their valuable time and input, including Xu Xiaojie (Chinese Academy of Social Sciences); Jiang Xuefeng and other staff of the CNPC Economics and Technology Research Institute; Han Wenke, Liu Xiaoli, Gao Shixian, Yang Yufeng and Jiang Xiaoqiang (Energy Research Institute); Erica Downs (Brookings Institution); Trevor Houser (Rhodium Group); Akhan Mukhanov; John Seaman (IFRI); Liu Li (State Information Center); David Kirsch and Claire Wong (PFC Energy); Shahriar Fesharaki, Wu Kang, Wang Lijuan, Zhang Liutong and Jeff Brown (FACTS Global Energy); Laurent Chevalier and Ma Xin (TOTAL), Xavier Chen (BP China); Tom Miles and Chen Aizhu (Thomson Reuters, Beijing); Zhang Xin (China Council for the Promotion of International Trade); Andrew Shaw (US Embassy, China); Tommy Flakk (Norwegian Embassy, Beijing); Norman Valentine, Tom Ellacott and Sophie Lee-Camax of Wood Mackenzie Corporate Service; and other colleagues wish to remain anonymous.

While this paper would not be possible without these colleagues, the views expressed herein and responsibility for all errors of fact belong to the authors.

1. Summary

Much commentary regarding the overseas activity of China's national oil companies (NOCs) has presumed that the firms are acting under instructions and in close co-ordination with the Chinese government. Some experts have also expressed concerns that the activities of NOCs could result in reduced and more-expensive supplies to other oil-importing nations. The IEA has carried out an assessment based on original research and secondary sources which finds the relationship between the Chinese government and the NOCs is complex with often divergent interests. While China's NOCs are majority-owned by the government (domestic and overseas private shareholders own minority stakes for publicly listed subsidiaries), they are not government-run. Their observed behaviour is the result of a complex interplay between individuals and groups associated with the firms, and whose interests are not always aligned, and where commercial incentive is the main driver.

Despite some instances of co-ordination, there seems to be a high degree of independence of the NOCs from government, and sometimes of subsidiaries of the NOCs from their headquarters. Our analysis indicates that, notwithstanding the tendency of the NOCs, in domestic communications, to cast their overseas activities in terms of support for national energy security objectives, their actions appear mainly to be driven by commercial incentives to take advantage of available opportunities in the global marketplace. This independent, commercially driven behaviour is particularly pronounced in upstream investments and operations, while policy drivers seem to play a larger role in some, though not all, transport (pipeline) projects. Their investments have, for the most part, helped to increase global supplies of oil and gas via the same international market that other importers rely on.

In recent years, the three major Chinese NOCs – China National Petroleum Corporation (CNPC), China Petroleum & Chemical Corporation (Sinopec) and China National Offshore Oil Corporation (CNOOC) – have been learning a great deal about doing business abroad, and have emerged as significant players in global mergers and acquisitions in upstream oil and natural gas. The USD 18.2 billion spent on merger and acquisition (M&A) deals by Chinese companies in 2009 accounted for 13% of total global oil and gas acquisitions (USD 144 billion), and for 61% of all acquisitions by national oil companies (USD 30 billion; CNPC Research Institute of Economics & Technology, 2010). In 2010, Chinese companies spent USD 29.39 billion approximately again with more than half invested in Latin American (USD 15.74 billion) (see Annexes, *1. Chinese foreign oil and gas acquisition deals since 2002*). Such a level of activity should not be surprising; in 2009, when world oil demand fell 1.24 million barrels per day (mb/d), China's rose by 0.7 mb/d. Similarly, while world gas demand fell by 2%, China's gas demand increased by 11%. As domestic production is at or near its peak, virtually every incremental barrel or cubic meter of oil or gas consumed must be imported.

According to IEA data, successful acquisitions allowed China's NOCs to expand their overseas equity shares from 1.1 mb/d in 2009 to 1.36 mb/d in the first quarter of 2010; for comparison, China's domestic production in 2009 was 4.0 mb/d. Chinese oil companies are now operating in 31 countries and have equity production in 20 of these countries, though their equity shares are mostly located in four countries: Kazakhstan, Sudan, Venezuela and Angola. No evidence suggests that the Chinese government currently imposes a quota on the NOCs regarding the amount of their equity oil that they must ship to China. Decisions about the marketing of equity oil — where the Chinese company has control over the disposition of its share of production — are mainly based on commercial considerations, in some cases, carried out by marketing subsidiaries located outside the headquarters of the NOCs.

The Chinese NOCs substantial investments and pursuit of service contracts and loans to resource-rich countries have contributed and will continue to contribute to global upstream investment and global oil supply. For instance, China's NOCs are working together with international oil companies (IOCs) and NOCs from other countries to increase crude production in Iraq. Their investments are also contributing to development of oil and gas fields in Russia, Central Asia, Latin America and Africa.

In addition to the upstream supply activity, Chinese NOCs are investing in transnational oil pipelines in North, Central and Southeast Asia, adding new dimensions to the market and political dynamics of these regions while enhancing economic development. While these pipelines will help to diversify supplies, China will continue to rely on the Strait of Malacca for the majority of its energy imports from Africa and the Middle East; 77% of total China's total oil imports currently are brought in via this shipping lane, and that could drop to 54%, even as the volume shipped through the Strait continues to rise. China is also investing in gas pipelines from Central Asia (Turkmenistan) and Myanmar, and is envisaging gas pipelines from Russia. Meanwhile, Chinese NOCs have been trying to secure new liquefied natural gas (LNG) supplies. LNG imports from Qatar will also be transited through the Strait, but not those from Australia.

Based on IEA research, this report examines the Chinese NOCs to assess their motivations and the strategies applied to expand overseas, and the fragmented, decentralised, and evolving relationship between the NOCs and the Chinese government. It provides detailed information on NOCs overseas acquisitions and long-term service and supply contracts, focusing on deals since the beginning of 2009. The paper assesses the relationship between NOCs and other players in the Chinese political system. The paper then takes up the regional impact of NOCs investments in transnational pipelines and explores whether these investments could reduce China's dependency on imports through the Strait of Malacca.

There are many questions concerning the behaviour of China's NOCs, but data availability and resource limitations confine the present analysis to a subset of them. Topics not covered include, for instance, degree of transparency of NOCs overseas deals, and the impact on governance in nations that receive the investments. Despite these restrictions, every effort has been made to provide a balanced and objective perspective on the subject.

2. Background

Origin of China's NOCs

China's NOCs are among the world's largest companies (Table 1). In 2009, at a time when most international oil companies cut back on their investment spending, Chinese NOCs, along with other Chinese companies, invested in 10 overseas acquisitions for a total of USD 18.2 billon. In the same year, China imported just under four million barrels per day (mb/d) of crude oil, up 14% from 2008, and the first year that China imported more than half (51.3% according to IEA data) of its crude oil consumption. China started to import LNG only in 2006, and began importing pipeline gas in early 2010. To many Chinese policy makers and scholars, this dependence on imported energy is a harsh reality they must face, and a spur to action.

Table 1: China's NOCs in numbers

Country	Global ranking	Revenue 2009 (USD million)	Profits 2009 (USD million)	Assets (USD million)	Number of employees
CNPC	10	165 496	10 272	325 384	1 649 992
Sinopec	7	187 518	5 756	188 793	633 383
CNOOC	252	30 680	3 634	41 943	65 800
Sinochem	203	35 577	659	25 136	44 256

Sources: 2010 Fortune Global 500 ranking; company annual reports.

To understand the overseas investment strategies of the Chinese NOCs, one must understand the origins of these enterprises. In fact, CNPC, Sinopec and CNOOC share a common set of parents: the former Ministry of Petroleum Industry and the former Ministry of Chemical Industry. In the early 1980s, the initial years of China's economic system reforms, the Chinese government decided to convert the productive assets of these and other ministries into state-owned enterprises (SOEs). The objectives were to introduce competition, promote economic efficiency and a wider share of ownership, subject SOEs to market discipline, develop a national capital market, raise tax revenues to the state and reduce government outlays (Lewis, 2007; Naughton, 1996).

The China National Oil and Natural Gas Corporation was formed out of the onshore upstream oil and gas production assets. In 1998, it was incorporated as CNPC, the largest Chinese NOC, the fifth-largest oil company in the world according to *Petroleum Intelligence Weekly* in 2009, and ranked tenth in the 2010 *Global Fortune* 500 listing (Table 1). Sinopec, the second-largest NOC, was given responsibility for all oil refining, marketing and petrochemical manufacturing capacity, and now dominates China's downstream market. Today, Sinopec is the largest Chinese company in terms of revenue. By comparison, CNOOC is relatively small, reflecting the country's small assets offshore, a new area of activity for China then. However, CNOOC soon became the most profitable of the NOCs, in part because of its focus on crude oil and lack of exposure to the highly controlled domestic market for refined products. It achieved an operating profit margin of 34% in 2008.

The three major NOCs were also geographically divided, with CNPC controlling northern China, Sinopec the South, and CNOOC dominating offshore production. These boundaries have gradually blurred as market reforms have given them the freedom to move beyond their initial functional and geographical areas. Nevertheless, CNPC still dominates pipeline construction and operation, Sinopec is by far the largest refiner and CNOOC still specialises in offshore upstream production.

From 2000 to 2001, all three NOCs created subsidiaries listed on Hong Kong's stock exchange, with PetroChina (CNPC's listed company) raising USD 2.9 billion, Sinopec raising USD 3.5 billion, and CNOOC raising 1.3 billion. Today, they are also listed on the New York and Shanghai stock exchanges.[1]

CNPC was the first of the Chinese NOCs to expand its operations overseas. In the early 1990s, CNPC started to invest in Sudan, Peru and Kazakhstan despite the government's focus at that time on self-reliance and increasing domestic oil output. Their presence in producer countries has been matched by the opening of offices devoted to trading, finance and other market activity in London, New York and elsewhere.

Since the beginning of 2009, CNPC, Sinopec and CNOOC, along with other Chinese players, have ramped up their overseas investment activities. From January 2009 to December 2010, these companies, along with other smaller companies from China, spent at least USD 47.59 billion to acquire oil and gas assets around the world. The total amount spent on M&A deals by Chinese companies in 2009 was USD 18.2 billion, accounting for 13% of total global acquisitions (USD 144 billion), and 61% of all acquisitions by national oil companies (USD 30 billion). In 2010, Chinese companies spent USD 29.39 billion approximately again with more than half invested in Latin American (USD 15.74 billion) (see Annexes, *1. Chinese foreign oil and gas acquisition deals since 2002*).[2] Sinopec was the leader among the three NOCs in 2010. It spent USD 7.1 billion to purchase 40% stake of Brazilian subsidiary of Spanish oil company Repsol and also spent USD 4.7 billion to purchase a 9.03% share in the Canadian oil sands company Syncrude; CNPC's publicly listed arm, PetroChina, joined with Shell to acquire a 100% stake of Australian coalbed methane producer Arrow Energy; and CNOOC bought 50% of the Argentine oil company, Bridas. CNPC also purchased a 35% stake in Shell's subsidiary in Syria for an undisclosed amount. Sinochem and the sovereign wealth fund, the China Investment Corporation (CIC), also made purchases (see Annexes, *1. Chinese foreign oil and gas acquisition deals since 2002*).

In addition, from the beginning of 2009 to December2010, CNPC and Sinopec were involved in 12 loan-for-oil deals with nine countries worth estimated USD 77 billion (see Annexes, 2. *China's loans for long-term oil and gas supply signed since January 2009*). Furthermore, the NOCs have concluded contracts that commit them to invest at least USD 18 billion in future exploration and development in the Middle East, mostly in Iraq and Iran, from 2008 to mid-2010 (see Annexes, 3. *Recent agreements requiring substantial future investment in the Middle East since 2008*).

Interests: Why are China's NOCs going abroad?

China's oil and gas production demand and supply

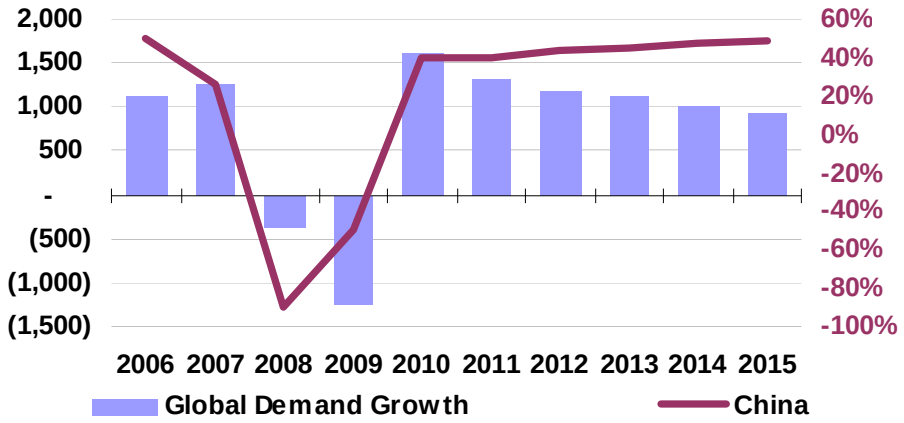
Chinese oil fields are aging, their reserves-to-production ratios (R/P ratio) are low, and domestic oil production is nearing its peak. As a result, the country is almost entirely dependent on the international oil market to meet incremental oil demand. China became a net oil importer in 1993. For the past 17 years, China has experienced strong economic growth, and recently became the second-largest economy in the world. Even during the recent financial and economic crisis, China managed to achieve 8.7% GDP growth in 2009, and 10.3% in 2010.

It requires a great amount of energy-intensive raw materials and infrastructure to satisfy China's expanding consumer demand, as well as the rest of the world's demand for Chinese manufactured goods. This has stimulated output from heavy industry, which also received a boost from China's recent stimulus spending on energy-intensive infrastructure and buildings.

[1] CNOOC is not listed on the Shanghai stock exchange.

[2] According Wood Mackenzie (2010), the M&A deals of the three NOCs accounted for nearly 20% of global deals in the first quarter of 2010.

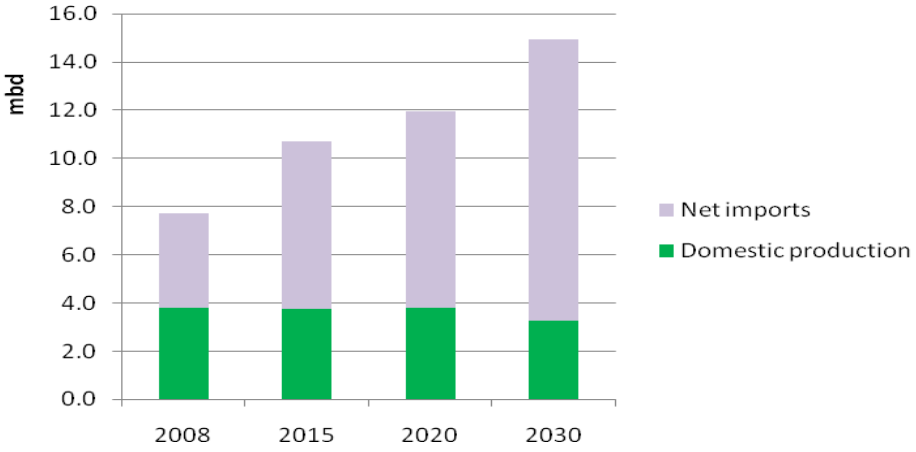
Figure 1: China's contribution to oil demand growth, 2010-15, kb/d



Source: IEA data and analysis.

The associated demand for fuel used to transport goods and to provide the growing fleets of private vehicles (China became the largest auto market in the world in 2009), as well as the rising demand for petrochemical feedstocks, has kept upward pressure on oil consumption.[3] China's great hunger for energy, in particular its strong oil imports,[4] contrasts with the recent fall in demand exhibited by major industrialised countries, which were hit harder by the recession. According to IEA research, almost half of global oil demand growth in the next five years will come from China (Figure 1). Looking farther ahead, the scenarios in the IEA's *World Energy Outlook 2010* (IEA, 2010a) show China importing 79% of the oil it consumes by 2030, and accounting for a larger increment in oil demand than any other country (Figure 2).

Figure 2: Long-term outlook for China's oil production and imports



Source: IEA (2010a).

Most of China's projected oil imports will continue to come from a small number of countries. In 2009, the top ten crude oil suppliers to China (in order of import volumes) were Saudi Arabia, Angola, Iran, Russia, Sudan, Oman, Iraq, Kuwait, Libya and Kazakhstan. As many other net oil importers,

[3] This effect cannot be accurately quantified, as analysts must rely on estimates of apparent demand in the absence of comprehensive consumption and inventory data.

[4] A relatively small portion of the increment in oil demand was due to filling of the first phase of China's strategic oil reserves. Lack of public data, however, prevents all but rough estimation of such flows.

especially in Asia, China relies heavily on suppliers in the Middle East with 47% of its total imports in 2009 originating from there (Figure 3). That high degree of reliance is unlikely to change, even though China has been diversifying supply to Africa, Central Asia, Latin America and Russia, where NOCs are seeking to expand their upstream activities.

Figure 3: China's crude import by region, 2009 and first half of 2010

Source: Xinhua News Agency (2010).

According to the IEA's *Medium-Term Oil and Gas Markets 2010* (*MTOGM*; IEA, 2010b), China's gas market is one of the fastest-growing in the world, with a demand of 87.5 billion cubic meters (bcm) in 2009. It is expected to reach 200 bcm by 2015. China's natural gas production is reported to have reached 83 bcm in 2009. In the first half of 2010, China's gas demand increased by 22% year-on-year, according to China's National Development and Reform Commission (NDRC). The rest of the demand was satisfied through imports of LNG and the newly opened Central Asian pipeline that will eventually bring around 40 bcm of gas[5] from Turkmenistan and possibly additional amounts from other countries. Reportedly, the draft Clean Energy Development Plan being prepared by the National Energy Administration (NEA) calls for the share of natural gas in China's energy mix to rise sharply, from 4% currently to 8.3 % by 2015. CNPC estimates that gas demand could reach 230 by 2015, increasing to 250 bcm to 340 bcm by 2020. Even with vigorous exploitation of domestic onshore and offshore resources, including unconventional gas, much of the demand will be met by imports.

Motivations and strategies for overseas investments

The NOCs most frequently cited objectives for investing internationally are to increase their oil and gas reserves, to expand production and to diversify their sources of supply. These goals are now supported at the highest levels of government; when the State Council-level National Energy Commission (NEC; authorised in 2008 and formed in January 2010) met for the first time in April 2010, "securing energy supply through international co-operation" was declared to be one of its six major areas of focus.6 This is the latest expression of the "Going Abroad" (sometimes rendered as "Going Out") policy. This concept dominates the narrative concerning the actions of the Chinese companies, which are seen by many as responding to a political concern with energy security, despite the reforms that have made the NOCs independent entities.

This section shows, however, commercial motives play a large, and perhaps the largest part. Observers of the NOCs have identified key motives, suggesting that expanding control over

5 The capacity of the Central Asia-China Pipeline is scheduled to rise from the current 10 bcm to around 40 bcm by 2012 with the completion of a second string and additional compression (IEA, 2010b).

6 The meeting took place on 22 April 2010 (Xinhua News Agency, 2010).

resources and supplies is only one of many motivations (Table 2). Moreover, as the next section shows, the new acquisitions do not translate neatly or exclusively into supplies flowing to China.

Table 2: NOCs motivations and strategies

Motivations for investing abroad	Main strategies used to expand
• Expand oil and gas reserves and production.	• Diversify energy supply sources and take advantage of new business opportunities.
• Diversify energy supplies to avoid risks.	• Target assets to add synergy to existing assets.
• Become "international NOC".	• Partner with other NOCs and IOCs, build relationships and diversify risk.
• Develop an integrated supply chain.	• Pursue market-for-resources deals that exchange access to China's market for access to resources.
• Gain technical know-how and streamline managerial capacities.	• Utilise strong financial resources and government policy support.

Source: XU Xiaojie (2007), PFC Energy (2010), IEA research, FACTS Global Energy (2009).

Some, though certainly not all, of the efforts by the NOCs to acquire producing assets overseas have been notable successes. In June 2009, by acquiring Addax, Sinopec was able to add producing assets and reserves in West Africa and Northern Iraq's Kurdish region.[7] Sinopec paid USD 8.8 billion for this acquisition, making it by far the largest such deal closed by a Chinese NOC. The NOCs have also tried hard to gain a foothold in Iraq, hoping hereby to access the world's second-largest proven reserves, despite the low service fees offered for these deals. Since 2009, NOCs have won three contract bids and gained rights to develop the Rumaila, Halfaya and Missan oil fields with international partners such as BP, TOTAL Turkish Petroleum and Petronas (see Annexes, 3. *Recent agreements requiring substantial future investment in the Middle East since 2008*). CNPC, meanwhile, had also in 2008 successfully revived a contract for developing the Al-Ahdab oil field, which it had negotiated under the pre-war Saddam Hussein regime. CNPC is the only NOC or IOC to achieve this type of re-negotiation (see Annexes, 3. *Recent agreements requiring substantial future investment in the Middle East since 2008*).

The NOCs also expanded their investments into Bolivia, Brazil, Ecuador, Kazakhstan Turkmenistan and Venezuela, securing long-term oil and gas supplies through loan-for-oil or loan-for-gas deals. These investments diversified NOCs supply sources outside of the Middle East and Africa (see Annexes, 2. *China's loans for long-term oil and gas supply signed since January 2009*). Chinese banks provided financial support, and in some cases (such as in Kazakhstan and Russia), the Chinese government was involved in finalising the deals. (This case is discussed in Section 4, *Investing in transnational pipeline investments, From the West*).

The Going Abroad policy is actually the ratification by government of NOCs early efforts to invest abroad. When CNPC first sought to invest overseas, in 1992 in Peru and in 1996 in Sudan and Venezuela, it did not obtain government approval. In fact, government planners took little notice and did not envision overseas upstream investments as a sound strategy to meet the growing Chinese demand (Xu, 2007). After China joined the World Trade Organisation (WTO), the idea of creating national enterprises that could be competitive internationally gained ground. This coincided with growing concern about rising oil imports, and resulted in an expression of support for what the NOCs were already engaged in.

[7] Sinopec's new acquisition in Northern Iraq was pronounced illegal by the Iraqi government, and the company was prohibited from participating in bidding for service contracts in Iraq. Sinopec is still working with the Iraqi government on this issue. While Sinopec was barred from bidding in the 2009 licensing rounds, that did not affect the position of CNPC or CNOOC.

The NOCs ambition to expand internationally is reflected in personnel choices as well as in strategic goals for investment and operations. This goal is also championed by government officials, who have long spoken of turning China's key state-invested enterprises into globally competitive firms. CNPC has promoted professional managers with extensive international operational experience to senior positions and its public listed subsidiary, PetroChina, is said to be looking to invest USD 60 billion in international expansions over the next ten years. In 2009, CNPC produced 69.6 million metric tons (Mt) of crude oil and 8.2 bcm of natural gas outside of China, and Sinopec produced nearly 12.9 Mt.

The NOCs are targeting assets to complement their existing portfolios and to integrate their supply chains. For example, CNPC wanted to build up its global downstream presence to derive greater benefit from its growing global upstream production. PetroChina acquired Singapore Petroleum Company, which has strong downstream assets in the Asia-Pacific region. This deal will deepen CNPC's international oil-trading position with refining capacity, product storage, pipelines and other logistic assets in Singapore (PFC Energy, 2010), a major oil-trading hub in Asia-Pacific.

Although upstream investment is the main focus of the NOCs investments abroad, they recognise that building refineries or pipelines can help them to quickly respond to local markets. At the same time, it shows their commitment to host countries, thus gaining credibility and strengthening relationships. In November 2009, for instance, CNPC and Petronas signed a memorandum of understanding (MOU) with Sudan to expand the Khartoum refinery capacity by 50 kb/d by 2013. In exchange, CNPC will gain greater access to upstream projects in the country, in addition to the seven upstream projects it already operates there (IEA, 2010b). Sudan was one of the first countries the NOCs invested in, and over the years CNPC has remained committed to Sudan despite international criticism of the Sudanese government's record in Darfur. China imported 52% of the 465 kb/d of crude oil that Sudan produced in 2009.

The Chinese investments in the African downstream sector could reach to more than 1.3 mb/d of refining capacity. In addition to Sudan, CNPC is also investing in downstream in Chad, Niger and potentially Egypt, Nigeria and Uganda. According to the *MTOGM* (IEA, 2010b), however, it is unlikely all the projects will materialise.

Chinese NOCs are finding that successful expansion abroad requires them to operate differently, and they are evolving and learning from their early overseas experiences. When competing overseas, without the oligopoly status they have in China, they must operate more like IOCs. Backing from the Chinese government is not a universal solution to the problems of investing in other countries. Co-operation with other NOCs or IOCs has proven to be crucial for NOCs to enter into many unfamiliar host countries and to reduce risks in their investments. This was particularly the case in 2009 when Chinese NOCs joined with other partners to participate in bidding rounds in Iraq. Bidding in partnership diversified the risk for each company in a highly risky and politically unstable country.

Instead of working alone, as in their early days in Africa, Chinese NOCs are now keen to establish strategic partnerships with other NOCs and IOCs. NOCs can gain technical know-how and streamline their managerial capacity by forming alliances. Currently, Chinese NOCs lack technical expertise in deep-water exploration, so, for instance, CNOOC is working with TOTAL in Nigeria's Akpo and Egina deep-water fields to gain this knowledge in preparation for exploring domestic deepwater reserves. China's NOCs are also trying to gain experience in LNG projects to enable them to better satisfy the rapidly growing gas demand in China (see Annexes, 4. *China's long-term LNG contracts*). They have acquired stakes in liquefaction projects in Indonesia and Australia to gain expertise across the LNG supply chain.

The NOCs are interested in unconventional resources such as coalbed methane (CBM), shale gas and oil sands projects, both in China and elsewhere. CNPC has announced plans to increase production from CBM, fuel ethanol and oil sands from 1.25 Mt/y (25 mb/d) in 2010 to 6 Mt/y (120 mb/d) in 2015 (PFC Energy, 2010). Due to their lack of experience in shale gas, Chinese NOCs are keen to invest abroad in the form of partnership and joint-venture. TOTAL is bringing in its experience to develop a Chinese tight gas project at Sulige in co-operation with PetroChina. This was the main driving force for PetroChina's partnership with Shell to acquire Arrow Energy in March 2010. In April 2010, Sinopec and TOTAL jointly bought 9.03% of the Canadian oil sands company, Syncrude, from ConocoPhillips. CNPC/PetroChina also purchased 60% of Athabasca Oil Sands Corp's Mackay River and Dover oil sands projects in Alberta Canada. Sinopec's acquisitions in the Canadian oil sands are also examples of attempts to buy the technical experience they lack. CNPC and Canadian Encana agreed in June 2010 to form a joint venture to develop Encana's shale-gas assets in British Columbia. On 11 October, 2010, CNOOC announced that its wholly owned subsidiaries would acquire 33.3% of Chesapeake Energy's Eagle Ford shale gas asset with USD 2.16 billion.

By partnering with other NOCs and IOCs in overseas ventures, the Chinese companies can also reduce the risks posed by working in unfamiliar cultures. This type of partnership could help NOCs to avoid political risks at a time of rising resource nationalism in some countries and accusations of Chinese NOCs blocking resources to others. NOCs have become more aware of the political sensitivities as they have gained experiences in different countries (PFC Energy, 2010). By partnering with Shell, for instance, CNPC gains direct benefits from technical co-operation. Similarly, CNPC, through the acquisition of Arrow Energy in Australia, and joining Shell's share in Syria, is now in a position to take advantage of Shell's established local connections, instead of having to build its own network from scratch. At the same time, the tie-up provides CNPC a way to mitigate negative international attention, and attenuate demands for greater transparency.

Another key benefit of these partnerships is that NOCs are able to leverage IOCs' cross-cultural knowledge in international operations, which NOCs lack and would need years to build up. Successful acquisitions do not automatically translate into successful operations. NOCs began to cultivate cross-cultural awareness among their work forces, and even began to hire non-Chinese employees to facilitate this.

Table 3: Downstream co-operation with companies from resource-rich countries

NOCs from resource-rich countries	Chinese partners	Number of filling stations planned		Location
Saudi Aramco/ExxonMobil	Sinopec	750		Fujian
Rosneft	CNPC	300-500		Northeast (location tbd)
Investors from resource-rich countries	**Chinese partners**	**Refinery product types and crude processing capacity (Mt/y)**		**Location**
Saudi Aramco/ ExxonMobil	Sinopec	crude: 12	ethylene: 0.8 polyethylene: 0.8	Quanzhou, Fujian
SABIC (Saudi Arabia)	Sinopec		ethylene: 1 polyethylene: 0.6 glycol: 0.4	Tianjin
Rosneft	CNPC	crude: 15	polystyrene	Tianjin
Kuwait National Petroleum	Sinopec	crude: 15	ethylene: 0.1	Zhanjiang, Guangdong
Venezuela PDVSA	CNPC	crude: 20		Jieyang, Guangdong
Qatar Petroleum /Shell	CNPC	crude: 20	ethylene: 0.12	Taizhou, Zhejiang

Source: CNPC Economic and Technical Research Institute, (2010).

The IOCs and other NOCs have, for their part, been keen to work with Chinese NOCs because, as industry insiders have pointed out, "the wind is blowing towards the East". NOCs are fully aware of this advantage. One strategy they have used to expand overseas partnership is the "market-for-resource" approach (Table 2), by which limited access to China's vast market is granted to the resource holder in exchange for imports of that resource to China. The enormous domestic market in China is perhaps the biggest attraction for other NOCs and IOCs to conclude partnerships with Chinese NOCs. BP, Shell, SK and TOTAL are working together with NOCs to build fuel filling stations in China. ExxonMobil, BP, Shell, TOTAL and BASF have all invested in refineries in China. The participation of NOCs from resource-rich countries is adding to the co-operation picture (Table 3). Saudi Aramco, for instance, is working with Sinopec on a crude stockpile facility in Hainan and on refinery facilities in Fujian.

The market-for-resource strategy is particularly useful for building relationships with NOCs from resource-rich countries. By offering a piece of the Chinese domestic market, NOCs leverage the relationships and trust they have built, gain preferential treatment for co-operation in these countries, or simply expand their opportunities to purchase more oil. Following the loan-for-oil agreement in February 2009 between Rosneft and CNPC concerning the oil pipeline to China (detailed in the section below on *Long-term loan-for-oil and loan-for-gas deals*), both sides signed a memorandum of agreement in October 2009 to build refineries in China's Tianjin. Rosneft agreed to supply 200 kb/d to 300 kb/d (in addition to amount agreed under the loan-for-oil deal), to be used mostly by the refinery project. This project is expected to go into service as soon as 2012. CNOOC used its position as China's original LNG co-ordinator and partnered with Australia's Northwest Shelf for the Guangdong LNG project, taking a 25% share. CNOOC committed to purchase LNG from the Northwest Shelf from 2006, and in return was able to acquire 5.3% of the production, lease and exploration licences (Xu, 2007).

The recent global financial crisis has presented numerous opportunities for China's prosperous NOCs to purchase quality assets abroad from stricken companies and to secure long-term supply deals by extending loans to resource-rich countries in need of capital. According to the IEA's *Oil Market Report (OMR) dated 13 April 2010)*, upstream capital cost had fallen by about 12% and upstream spending was around 15% lower in 2009 than in 2010, making it cheaper for China's NOCs to invest in upstream projects even as they encountered less competition from other investors in 2009. Appreciation of China's currency in recent years has also made buying assets abroad cheaper for the NOCs. Moreover, Chinese NOCs also enjoyed a competitive advantage through their access to the country's USD 2.45 trillion reserves (at the end of June 2010).

Chinese banks are willing partners. The China Development Bank (CDB) and the China Export-Import Bank (CEIB) are the two main banks that provided funding for China's long- term loans for oil or gas deals. These two banks are experienced in overseas investments. In September 2010, both CNPC and Sinopec formed strategic alliances with CDB. For example, CDB agreed to provide USD 30 billion loans to CNPC at low rates over the next five years to support CNPC's expansion abroad. CDB had already provided at least USD 44 billion in loans to resource-rich countries in 2009. China's NOCs were the indirect beneficiaries of these loans, as they received long-term oil and gas supplies at the same time (see Annexes, 2. *China's loans for long-term oil and gas supply signed since January 2009*).

CDB and CEIB are also state-owned enterprises (SOEs) like the NOCs. The motivation to invest in NOCs overseas activities, however, is not purely driven by the Chinese government's Going Abroad policy. Traditionally classified as Chinese policy banks, CDB and CEIB today are like other commercial banks in that they need to make money and to be profitable. Chinese scholar Xu Xiaojie has said that the banks today follow businesses. Investing in the NOCs quest for more oil supply seems to be a sound course given China's soaring oil demand, and, as the NOCs achieve greater success in their deals abroad, banks seem more willing to form strategic alliances with the NOCs. While the banks are able to offer credit to the NOCs at good rates (some have

suggested that this is, in part, because they themselves are state-owned), those lending decisions are based on commercial interests, not on government guidance.

NOCs have certainly utilised the resources that China's strong financial capacity offer, and they have also taken advantage of the Chinese government's Going Abroad policy. This policy has enabled the companies to gain support from the central government in signing long-term supply deals, building transnational pipelines and establishing the necessary political back-up for their investments in risky countries in Africa, the Middle East and elsewhere.

Some observers have suggested that China's NOCs, flush with cash, have been paying a premium for assets, freezing other bidders out. One report, for instance, concluded that in 2009, the total premium paid by the Chinese companies increased to 40% above the base case valuation of acquired assets (Wood Mackenzie, 2010). Others have pointed out that intermediaries who facilitated these deals for NOCs drove up the premium. However, interviews with industry insiders uncovered no evidence that there is systematic or intentional overpayment. Further, in-depth investigation of this topic would be needed to form a well-founded view on whether and under what circumstances the NOCs have paid over a reasonable range of market valuations for acquiring assets.

Despite their recent successes, the road to secure more foreign oil production assets has not been smooth for the NOCs. In 2009 alone, the NOCs failed in their attempts to acquire assets in Libya and Angola when the Libya National Oil Corporation and Angola's Sonangol exercised their pre-emption rights to block the offers. The enthusiasm of NOCs for new acquisitions has also led to their exploitation by producer states (Grieder, 2010). In Nigeria, CNOOC's interest to acquire assets was leaked in order to be used as a token in negotiations with IOCs. In the early years of their overseas purchasing efforts, NOCs lack of experience with public relations and political lobbying led to some disappointments. For instance, CNOOC's attempt and subsequent failure to acquire Unocal in the United States in 2005, generating lasting negative feelings in both countries, is the most widely known case. NOCs are facing rising nationalism among resource-rich countries as the world emerges from the current economic slump.

NOCs overseas equity shares

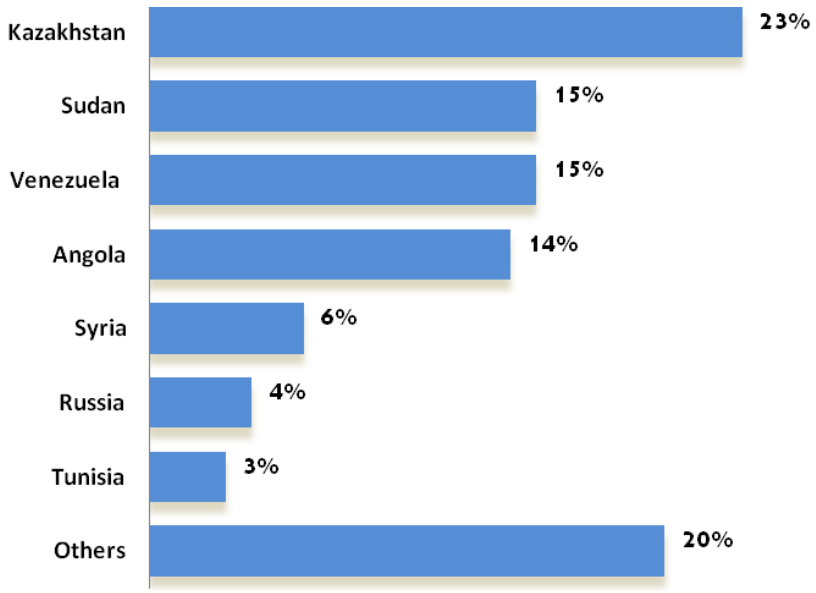
According to IEA data, successful acquisitions allowed China's NOCs to expand their overseas equity shares from 1.1 mb/d in 2009 to 1.36 mb/d in the first quarter of 2010; for comparison, China's domestic production in the first half of 2010 was 4.1 mb/d. Chinese oil companies are now operating in 31 countries and have equity production in 20, though their equity shares are mostly located in four countries: Kazakhstan, Sudan, Venezuela and Angola (Figure 4). The increased equity oil level is due to the new acquisitions and higher levels of production in Kazakhstan in early 2010. In 2009, the equity oil share of the NOCs is about 50% of its total foreign production. In 2009, CNPC's overseas crude oil production was 69.6 Mt (approximately 1.4 mb/d). FACTS Global Energy projected that Chinese NOCs overseas equity oil production could top 2 mb/d by 2020.

According to available data, Chinese NOCs equity production overseas in Q1 of 2010 was equivalent to 36% of the level of China's crude imports (which were 3.8 mb/d) in the first half of 2010. Only a portion, however, was actually shipped to China. Data on such movements are scattered and difficult to access, and where they are even possible to obtain at all (a problem hardly unique to China's NOCs), available evidence suggested that much of this equity oil was sold to local or international markets instead.[8]

8 Equity oil from Kazakhstan's Aktobe, for instance, was sold locally because prior to 2009, the field was not linked to the Kazakhstan-China Oil Pipeline. Pipeline from Kenkiyak to Atyrau is still going westward to the Caspian Sea. Similarly, equity oil from Venezuela was also sold mostly locally due to expensive shipping cost and Chinese refineries inability to process Venezuela oil, according to FACTS Global Energy and other sources.

No evidence brought to light in researching this paper suggests that the Chinese government currently imposes a quota on the NOCs regarding the amount of their equity oil that they must ship to China. Decisions about the marketing of equity oil, where the Chinese companies have control over the disposition of its share of production, appear to be dominated by market considerations. For instance, almost all the equity production Chinese NOCs have in the Americas was sold locally instead of being shipped back to China (FACTS Global Energy, 2010). Considering geographical distances, it is more costly to ship that oil to China. Additionally, Venezuelan heavy crude is not compatible with existing Chinese refining capacities. The latter barrier will soon be removed; PetroChina formed a joint venture with the Venezuelans to build a refinery to process this type of crude oil in Southern China. The planned capacity of this refinery is 200 kb/d. The current equity share NOCs have in Venezuela is 202 kb/d. Chinese crude imports from Venezuela ranged from 155 kb/d to 400 kb/d for the first seven months of 2010. Venezuelan President Hugo Chavez stated that he planned to export 1 mb/d to China by 2011 or 2012.

Figure 4: Estimated Chinese share of overseas equity in oil exporting countries, Q1 2010

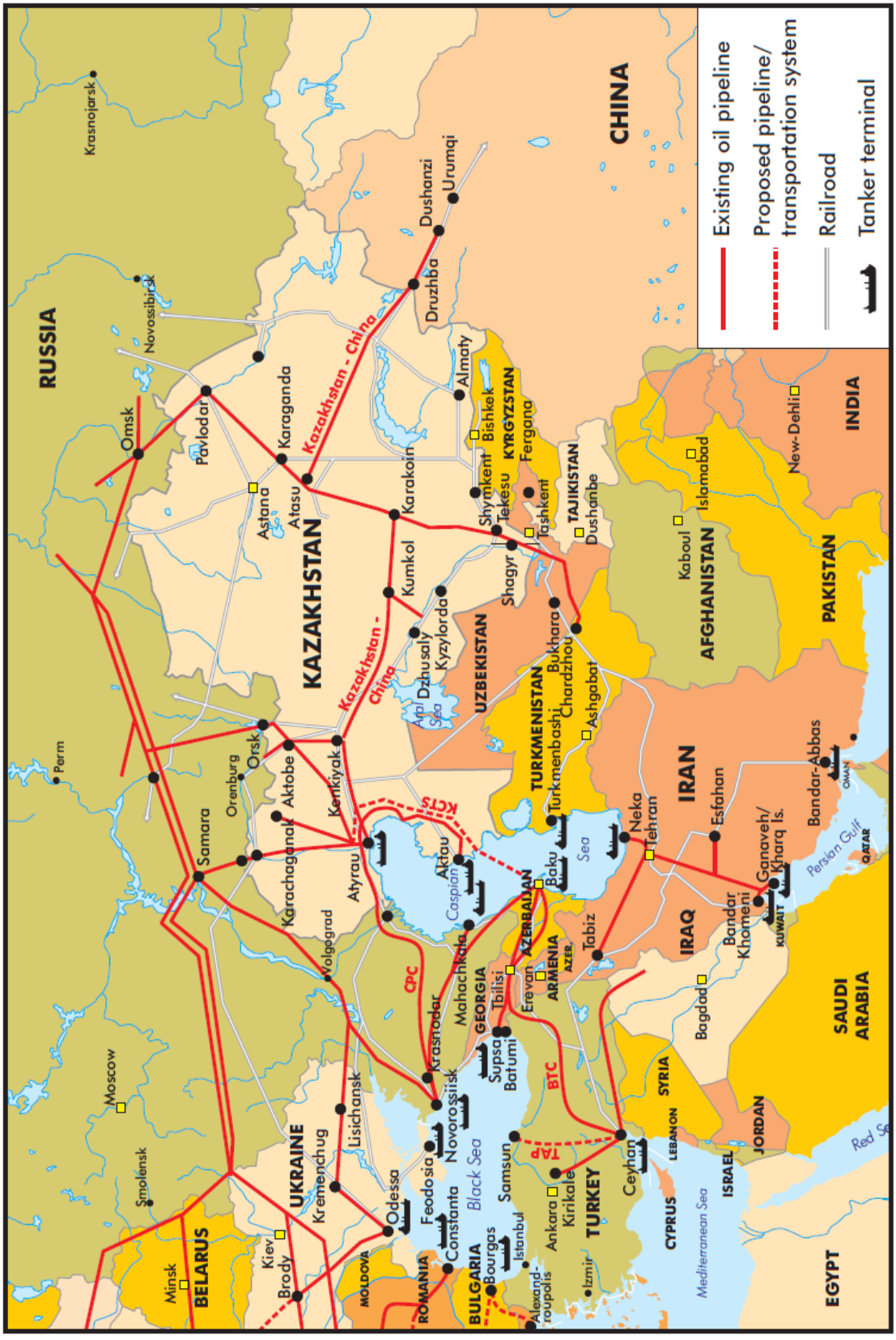


Others: Nigeria, Indonesia,Peru,Ecuador, Oman, Colombia, Canada, Yemen, Cameroon, Gabon, Iraq, Azerbaijian,Uzbekistan

Sources: IEA research; FACTS Global Energy

In an even more significant example related by a confidential industry source, CNPC's equity oil from Kazakhstan is not all shipped back via the new pipeline from Kazakhstan to China, which now delivers 200 kb/d. Two CNPC subsidiaries decide how the CNPC share of production from its holdings in Kazakhstan are marketed. CNPC International, the exploration and production (E&P) arm for CNPC's overseas production, determines if it would be profitable to sell the oil it produces to the CNPC trading company, China National United Oil Corporation (Chinaoil; a joint venture between CNPC and Sinochem). In some cases, selling to other players can be more profitable. Chinaoil also evaluates whether buying crude oil locally close to the pipeline starting point (Atasu, prior to 2009) is more economical than buying crude produced at Aktobe by CNPC's E&P subsidiary and transporting it to Atasu. Prior to completion of the Kazakhstan-China Oil Pipeline in 2009, the Chinese equity oil from the Aktobe field was known to be transported via the pipeline to Atyrau to be sold on the international market. That part of the pipeline is still operates only westwards to the Caspian Sea (Figures 5 and 8).

Figure 5: Central Asia oil network



The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

Representatives from PetroChina confirmed this finding on NOCs foreign equity oil, stating that decisions on whether to ship the equity oil to China or to sell locally were purely based on prevailing market prices (PetroChina Marketing Company, 2010). If there were a shortage in the Chinese market resulting from equity being sold to the international market, PetroChina would purchase oil from Middle East suppliers to fill the gap of supply in China.

It is very difficult to determine what share of their equity oil production in Angola and Sudan the NOCs may have shipped to China. Certainly the imports into China from both countries are substantial, but a great deal of information, most of it confidential to the companies, would be required to make an accurate assessment. While some oil may be shipped to China, some is also sold into the international market. Depending on the terms of a particular investment, the NOCs may not even have marketing control over their equity shares in some fields. Where the NOCs do have control, the share of the equity oil shipped to China may differ each year due to market conditions, international oil prices, and Chinese domestic product prices. Since the beginning of 2009 (to September 2010), due to the new domestic oil price scheme in China, domestic product price has been adjusted nine times to reflect the international oil price.[9] The NOCs have been lobbying hard for further reforms. Until the domestic market offers the NOCs greater incentives — that is, retail product prices that more closely reflect changes in world oil prices — Chinese equity oil is unlikely to all come back to China.

Service contracts in the Middle East

Equity shares are only one route by which China's NOCs have expanded upstream globally. Some resource-rich countries, particularly in the Middle East, only offer service contracts to foreign companies. Iraq, which holds the world's second-largest proven oil reserves, started to open its oils fields to foreign companies in the form of service contracts in 2009. To date, Chinese NOCs have won three contracts in collaboration with IOCs and other NOCs. CNPC jointly bid with BP to enter a service contract of 20 years in Iraq to develop its largest oil field, Rumaila, and with TOTAL and Petronas to develop the Halfaya oil field. Iraqi South Oil holds a 25% share in both of these bids. CNOOC recently won the contract with Turkish Petroleum (TPAO) to develop Iraq's Missan oil field. Iraq Drilling Company is the Iraqi partner and holds a 25% share (see Annexes, 3. *Recent agreements requiring substantial future investment in the Middle East since 2008*). The contract fees for the Iraqi services contracts are very low and some commentators are doubtful whether doing business in Iraq will be profitable in the long term. However, for the existing fields, the geological risk is small and the up-front capital spending is relatively modest before revenue starts to flow. So despite the concerns, IOCs and NOCs are still participating in the bidding rounds. IOCs are keen to partner with Chinese NOCs in Iraq to lower the cost of operations and to diversify risk. One IOC has mentioned off the record that the prospect of access to Chinese domestic markets is in fact a key consideration. All participants hope that commitment to develop existing fields will leave them well placed to undertake further field development later on.

Chinese NOCs, like other oil companies, consider Iraq as a key strategic country in which to gain a foothold because of the lack of other investable good quality assets globally. NOCs have proven to be willing to cut profits and to bear the political risks. According to the *MTOGM 2010*, the highest net increase in crude production capacity from 2010 to 2015 (from OPEC countries) will likely come from Iraq (1.0 mb/d) (Figure 6). In the first half of 2010, China's crude imports from Iraq showed a 148% increase over the same period in 2009 (Xinhua, 2010). In the first half of 2009, China imported 161 kb/d of crude oil from Iraq.

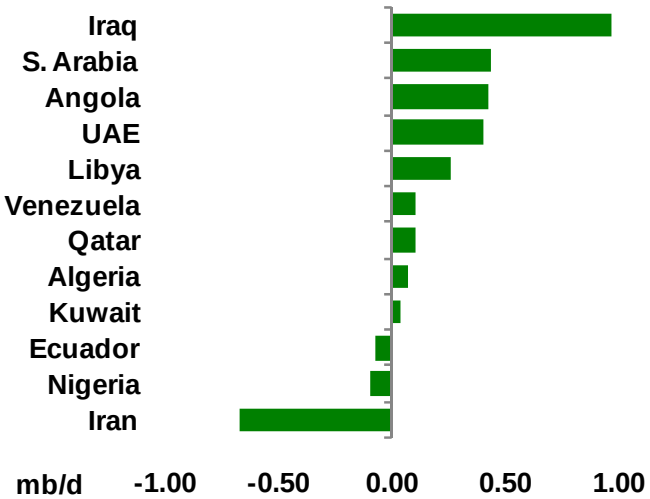
[9] Since January 2009, domestic prices are adjusted if the rolling average price of a basket of international crudes (including Brent, Dubai and Cinta) fluctuates by more than 4% for more than 22 consecutive working days.

The uncertain security outlook, however, presents a potential risk to NOCs investments in Iraq. After the parliamentary election held in Iraq on 7 March 2010, a new government was not formed until 11 November. In the absence of new government, violence had returned, particularly in and around Baghdad. President Obama's confirmation of plans to withdraw US troops from Iraq by the end of 2011 raised more security concerns. Whether the investments made by Chinese and other companies in Iraq turn into more supply to the international market will depend on the Iraqi government's ability to provide an attractive and safe business climate for foreign investors.

Chinese NOCs also made substantial investments in Iran in 2009 and have a significant presence in the country. CNPC signed a USD 4.7 billion agreement to develop Phase 11 of the South Pars field. In addition, CNPC and Sinopec have three other contracts to develop Iran's oil and gas fields (see Annexes, 3. *Recent agreements requiring substantial future investment in the Middle East since 2008*). According to Reuters, CNOOC is in talks to finalise a USD 16 billion deal to develop the North Pars gas field and to build an LNG plant. CNPC is in talks with Iran for a USD 3.6 billion deal to buy LNG from Phase 14 of South Pars project. CNPC is also in dialog to explore and develop energy reserves in Iran's Caspian region.

Chinese NOCs are the major investors in Iran's oil and gas industry. The *MTOGM 2010* (IEA, 2010b) concluded that Iran risks seeing a significant fall in productive capacity from 2009 to 2015 (Figure 6). Decline rates remain severe in some of their major fields and international sanctions continue to make it difficult for Iran's oil and gas industry to access the latest industry technology. Iran has the world's fourth-largest oil reserves and second-largest gas reserves. But a further round of UN sanctions in May 2010 has been supplemented by bilateral sanctions imposed by the United States and the European Union in July and by Japan in August. The effect on Iran's energy and financial sectors is likely to be more severe than hitherto. To some extent, the NOCs benefited from the vacuum left by western companies that have been scaling down their presence in Iran over the past four years (Reuters, 2010). However, some of the key technologies in the gas industry are beyond Chinese NOCs core capacity. The Chinese government opposes additional sanctions and is calling for continuing diplomatic efforts. Iran is also becoming more dependent on Chinese investment, and on the technologies and the equipment NOCs bring. What will happen to the large investment NOCs have committed remains unclear.

Figure 6: Incremental change in crude production capacity, 2009 to 2015



Source: IEA (2010b).

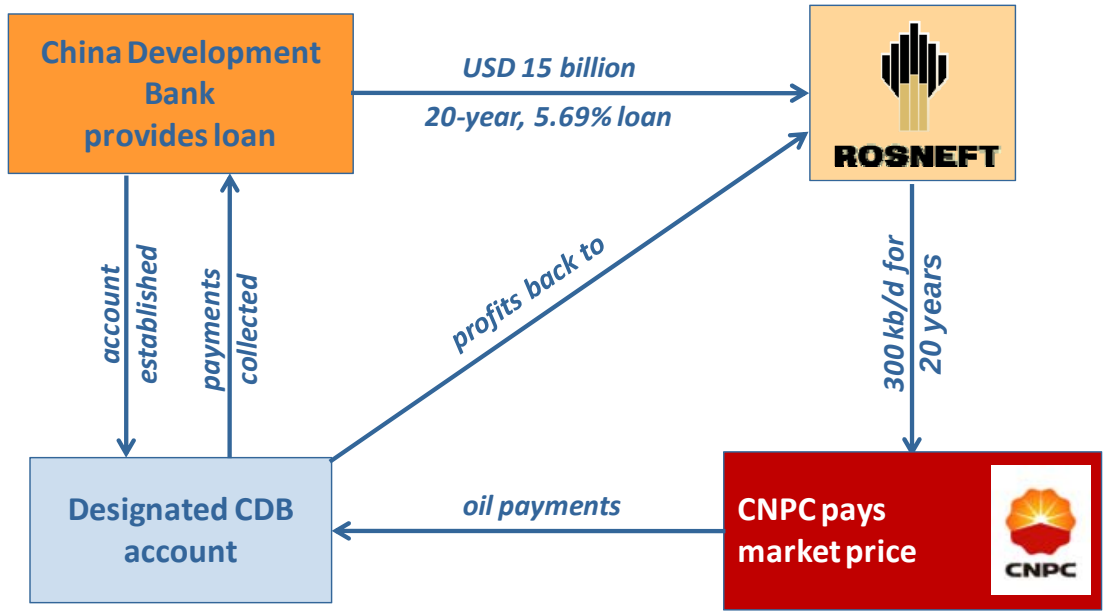
Entering into service contracts has become a dominant form of co-operation in resource-rich countries that are reluctant to sell assets. NOCs recognise the trend and are willing to bid for these contracts with or without IOCs. Moreover, they are willing to bear high political risks for the proven resources present in countries such as Iran and Iraq.

Long-term loan-for-oil and loan-for-gas deals

The conclusion of 12 loan-for-oil and loan-for-gas deals since January 2009 has been a significant development in NOCs efforts to secure more supplies both in crude oil and natural gas. On 17 February 2009, after 15 years of negotiation, it was announced that the China Development Bank would lend Russia's Rosneft and Transneft USD 15 billion and USD 10 billion, respectively. Five days later, China and Venezuela entered an agreement for a USD 4 billion joint development fund. By the end of 2010, the total loans that China had extended to these resource-rich countries had reached approximately USD 77 billion.

Using loan-for-oil and loan-for-gas deals to secure long-term supplies is not new and was used by Chinese NOCs before, but not at this scale and in such quantity. It seems apparent that the global financial crisis played an important role, particularly in 2009, because resource-rich countries were more eager to find money but reluctant to sell assets. The Chinese government also played a more active role in facilitating these deals than they had for NOCs acquisition deals. China's NOCs have signed loan-for-oil and loan-for-gas deals in nine countries: Angola, Bolivia, Brazil, Ecuador, Ghana, Kazakhstan, Russia, Turkmenistan and Venezuela (in alphabetic order). Each deal is unique, depending on the particular situation in each resource-rich country, but one example, of such a package deal with Russia, suffices to sketch out the typical players and their roles (Figure 7).

Figure 7: Sino-Russian loan-for-oil deal structure



Sources: IEA Research; FACTS Global Energy; Interfax.

According to interviews with Chinese experts and news reports from China, Rosneft had debt of USD 13 billion that it had to pay back by the summer of 2009. As the Russian government also suffered from the financial crisis, it too was looking for new revenues. Funds were needed to

develop the Eastern Siberian oil and gas fields in order to supply the Asian market. Russian government and Rosneft approached the Chinese government. CNPC, which had been negotiating with the Russians for 15 years, benefited and got the pipeline it had long desired into China's Northeast (detailed in section 4, *Investing in transnational pipelines, From the north*).

The result was that the China Development Bank agreed to provide the financing Russia needed. According to Interfax, the interest rate was 5.69%, a very favourable rate given that few commercial banks were lending at that time. As this was a bundled package deal, CNPC would gain the right to buy 300 kb/d of crude oil at market price for 20 years. CNPC would deposit the payment for oil into a designated account at CBD so that CBD could be guaranteed to receive payments from Rosneft. The USD 10 billion deal with Transneft works the same way. The pipeline from Russia will connect the East Siberia-Pacific Pipeline System (ESPO) at Skovorodino to China's Daqing refinery.

This is not the first such loan extended by a Chinese bank to a Russian company according to Erica Downs, a US scholar who describes the Sino-Russian energy relations as an "uncertain courtship" (Downs, 2010a). In 2004, CNPC loaned Rosneft USD 6 billion as an advance payment for oil supplies through 2010. Rosneft needed financial resource to purchase Yuganskneftegaz of Yukos. In 2006, CNPC bought USD 500 million worth of Rosneft shares during Rosneft's initial public offering. Later, CNPC financed a feasibility study of the ESPO's spur to China for USD 37 million (Downs, 2010a).

Despite the success in this case and others, loan-for-oil deals are not the preferred method by the NOCs to gain foreign supplies. There are risks involved; for example, in case of a change of government, contracts could be voided, or the resource-rich countries may not supply the quantity they promised. As quality assets are rarely for sale these days, however, loan-for-oil and -gas deals serve as an important alternative and a way to diversify supply so the Chinese NOCs are in line with the Chinese government's energy policy.

The successful negotiation of these loan-for-oil and -gas deals in 2009 demonstrated the ability of all players' (NOCs, Chinese government and Chinese financial institutions) to quickly respond to the opportunities presented by the global financial crisis, and to co-ordinate to design such bundled package deals.

Other Chinese investors

China has many smaller investors in addition to the "big three". The largest in this group is Sinochem (ranked 203 in the 2010 Global Fortune 500 Ranking; Table 1), a state-owned petrochemical company that held a monopoly on China's oil imports and exports before CNPC and Sinopec branched into this arena. Since 2001, Sinochem has conducted overseas upstream oil and gas exploration and production. Although Sinochem's overseas investments are small compared to those of the big three, its 2009 and 2010 investments were still much higher than in previous years (see Annexes, *1. Chinese foreign oil and gas acquisition deals since 2002*). In 2010, Sinochem's purchase of Statoil's 40% stake in Brazil's Peregrino oilfield with USD 3.07 billon highlights the company's growing financial ability and status as a newly emerging global M&A player.

A number of smaller players are active, as follows.

- Zhenhua Oil Company is a subsidiary of the China North Industries Corporation's (Norinco). A manufacturer of oil field equipment, construction, civil and military weapons, it has partnered with CNPC in Syria and Iraq.

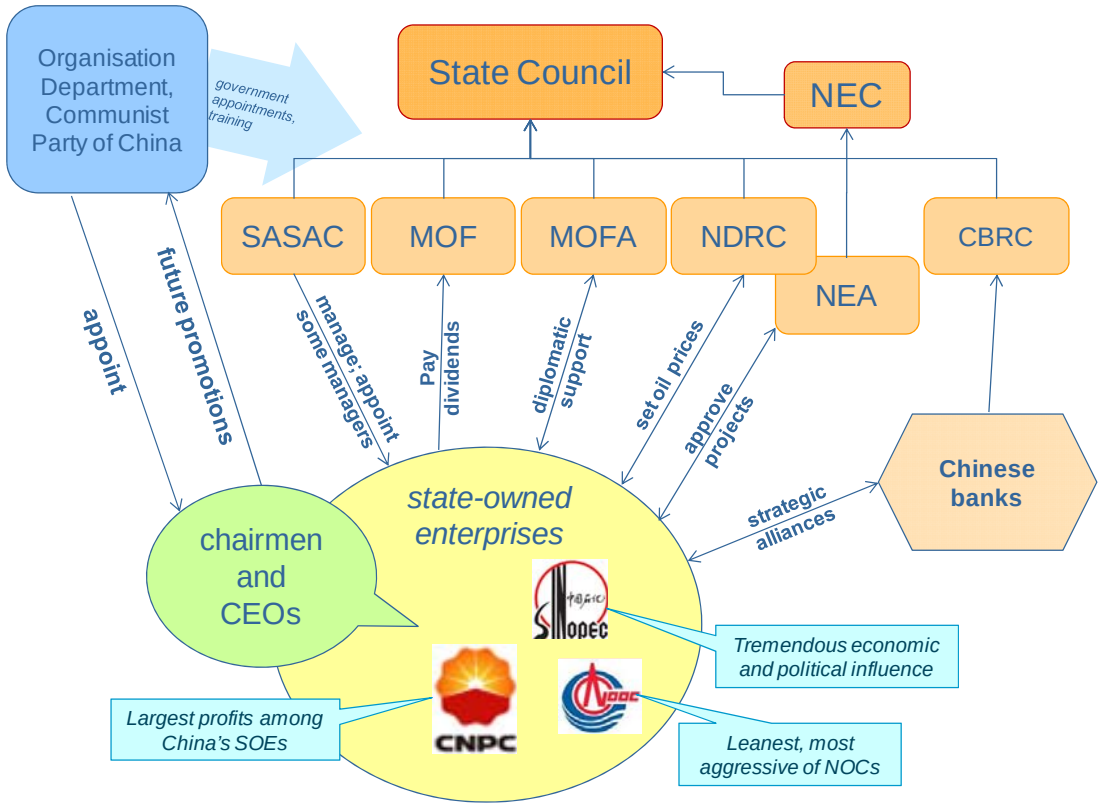
- Shaanxi Yanchang Petroleum Company is a small energy company from Shaanxi Province. Although most of its activities are in Shaanxi, it signed production sharing contracts in Thailand and Cameroon.
- Xinjiang Guanghui Industry is involved in the distribution and transportation of LNG, commodities wholesaling and retailing, as well as mining. In September 2009, it purchased 49% of Kazakhstan's Tarbagatay Munay (TBM) to jointly develop the Zaysan block in Eastern Kazakhstan.
- CITIC Energy is linked to the CITIC Group, a state-owned investment giant. It owns oil assets in Kazakhstan and Indonesia.
- The State Administration of Foreign Exchange is a sovereign wealth fund that had acquired 1.3% of TOTAL by 2008 with estimated USD 2.3 billion. The fund had also built up a 1% stake in BP at a cost of several billion USD by April 2008 (FACTS, 2009).
- CIC is another sovereign wealth fund, with USD 290 billion, that has started to invest aggressively in energy and commodities. Since 2009, it has invested in Russia's Nobel Oil, Kazakhstan's Kazmunaigas and bitumen assets in Canada.

3. Chinese NOCs: State-invested, not state-run

Misconceptions are widespread about the relationship between the Chinese government and the NOCs. The preceding discussion has already explored the diversity of motivations that drive NOCs, their degree of independence, and alliances with banks. This section focuses mainly on the web of business-government-Party ties that involves NOCs and SOEs. It depicts outward appearances of unanimity against a complex system of hidden divisions and decentralisation.

Contrary to one popular view, the NOCs are not mere puppets of the Chinese government (Downs, 2010b). They are owned (mainly) by the state, but not run by the state. In fact, they have a great deal of power *vis-à-vis* government, thanks to their historical association with former ministries, the high rank of the NOCs top leaders within the Communist Party of China (CPC), and the sheer size of their organisations and capacities compared to the government agencies that oversee them. Chinese NOCs share similarities with other Asian NOCs, but as a result of China's economic system reforms of the past three decades, they are also a unique group of enterprises.

Figure 8: Relations between state-owned enterprises and government in China



Notes: NEC = National Energy Commission; SASAC = State Assets Supervision and Administration Commission; MOF = Ministry of Finance; MOFA = Ministry of Foreign Affairs; NDRC = National Development and Reform Commission; NEA = National Energy Administration; CBRC = China Banking Regulatory Commission; SOE = state-owned enterprise.

Sources: IEA research; Naughton (2008), FACTS Global Energy.

Formally, the owner of China's national-level state-invested firms, including the NOCs, is the State Assets Supervision and Administration Commission (SASAC; Figure 8). SASAC was formed in 2003, seven years after the incorporation of CNPC and soon after the three NOCs first public

listings. SASAC's mandate is to supervise and manage the state-owned enterprises and enhance the management of the state-owned assets that fall under 123 large SOEs. However, the power of SASAC to control the behaviour of SOEs and how much it actually exercises the rights of ownership are open to debate.

For example, from 1994 to 2008, other than paying ordinary corporate taxes, none of the SOEs/NOCs paid any of their revenues to SASAC or any other ministry of the Chinese government. This is a change from China's own past (in the 1980s, a very large portion of state revenues came from CNPC), and very different from NOCs in other countries. For example, Malaysia's PETRONAS pays 50% of its profits to the Malaysian government (PFC Energy, 2010a). After a strong push by SASAC aiming to provide more oversight over state assets, NOCs pay 10% of their after-tax earnings to SASAC through the Ministry of Finance starting from 2008. However, this extra cost was offset by a 10% decrease in corporate income tax the same year. In the end, the SASAC's effort to gain more control over the NOCs (and other SOEs) did not affect the balance sheets of the NOCs. Unlike many oil-rich countries' governments, the Chinese government's fiscal budget does not depend only on tax revenue from NOCs (PFC Energy, 2010b).

As China's energy consumption has soared over the past decade, so has the financial and economic might of the NOCs, which hold oligopolistic power over the oil and gas industry in China (Table 1). Like anywhere else, this power can be converted into tremendous economic and political power, which enables NOCs to lobby for more influence.

In the Chinese government's bureaucratic ranking system, both CNPC and Sinopec are at ministry level, the same as SASAC. However, SASAC does not appoint the very top leaders of these NOCs; it only appoints other high-level managers. Instead, it is the Organisation Department of the CPC that directly appoints the top leaders of NOCs who hold vice ministerial rank. The heads of CNPC and Sinopec are also alternate members of the 17th CPC Central Committee, which consists of the 371 most politically powerful people in China (Downs, 2010b). The top executives of the NOCs are deeply connected to the top leadership of the government and the CPC; they must wear two hats, as leaders of major commercial enterprises and as top Party operatives. It is in the interests of both the government and the Party that the NOCs are commercially successful, and that they secure adequate oil and gas supplies. Leaders have a great deal of freedom in how they achieve these aims, and those who fulfil them have leverage in bargaining for future promotions.

The long series of economic system reforms initiated in the early 1980s has gradually liberalised and decentralised Chinese industry. While energy has remained a strategic sector and has remained much more within the control of the central government than other sectors, there has still been a great shift of power, resources, personnel and knowledge from government to the NOCs. The NDRC and the NEA retain powers of approval over investment projects (including foreign investment projects), and over oil and gas prices. These agencies, and the others that the NOCs answer to in various spheres, are understaffed and, in many respects, politically weaker than the NOCs (Downs, 2010b). The NOCs typically take the lead in overseas deals, and NEA does not necessarily get involved in negotiations unless it is asked by the NOCs to assist. While CNPC's investment in Kazakhstan was arranged in part by intensive negotiations involving the Chinese government, the Turkmen gas deal was largely a commercial transaction that was given the government's blessing only afterwards.

Cultivating and maintaining good relationships with NDRC and NEA is beneficial to the NOCs, as the latter sets domestic oil and gas prices (NDRC has price-setting power, and NEA and other agencies have advisory roles). Since the beginning of 2009, China implemented a new, more responsive, more market-based retail oil price system that immediately improved the NOCs profitability. The NOCs have been lobbying for further progress in this direction on oil price

setting. Government activity in other arenas also has important impacts on business. For instance, NEA's current plan to increase gas use to 8.3% of the total energy mix by 2015 has certainly influenced the NOCs business strategy in developing more gas business both at home and abroad. Such targets are typically set after consultations with an array of experts and stakeholders, including the NOCs.

Attempts to align commercial interests overseas with government policy for diplomacy and trade are hardly new, and hardly restricted to China. Chinese leaders often emphasise the importance of political stability at home, and are keen to foster similarly stable political environments in which Chinese companies have strategically significant overseas investments. The Chinese government also has initiated a broad range of activities that, while in unrelated areas of endeavour, create goodwill and indirectly benefit commercial investment activity. It has for many years sought to cultivate relationships with exporters of oil and other key resources. For example, the Chinese government has been providing development aid to Africa since the 1950s. In some cases, NOCs have requested diplomatic support to aid in initiating and concluding deals. As their foreign portfolio continues to grow, NOCs will likely to lobby for more diplomatic support from the Ministry of Foreign Affairs and its offices around the world.

The power of the NOCs (and other energy companies) with respect to government has been amply demonstrated by their successful lobbying in recent years to prevent formation of a ministry-level energy agency. This leaves the government with a relatively weak hand in pursuing strategic energy objectives, with the various agencies concerned with regulating different aspects of the NOCs activities often working at cross purposes. The newly formed National Energy Commission (NEC) might provide part of the answer to this fragmented and decentralised situation. The NEC has representatives of 20 ministries and agencies, and is headed by Premier Wen Jiabao. All interests groups, including the NOCs, are anxious to see what NEC will do to satisfy the Chinese energy supply need and the needs of various groups.

4. Investing in Transnational Pipelines

The Chinese NOCs have invested heavily, both economically and politically, into building transnational pipelines to diversify oil and gas supply routes. By the end of 2009, China had secured agreements with neighbouring countries to import oil and gas from all directions. From the North, oil imports from Russia were set to expand from the relatively small rail shipments via a new pipeline into China's northeastern Heilongjiang Province; gas imports were still in negotiation due to pricing issues, with signing hoped for in mid-2011. From the West, there were an oil pipeline from Kazakhstan and a gas pipeline from Turkmenistan, via Uzbekistan and Kazakhstan, into China's western autonomous region of Xinjiang. Finally, from the South, work had begun on parallel oil and gas pipelines to enable China to access Myanmar's gas reserves, and to transship oil from Africa and the Middle East, avoiding a passage through the Malacca chokepoint.

The Strait of Malacca links the Indian and Pacific Oceans via a long, narrow (less than 3 km at its narrowest point) and extremely busy channel.[10] It is the main route for oil and LNG shipped from the Persian Gulf and Africa to East Asian markets; in 2006, an estimated 15 mb/d were transported through the strait. All of China's oil and LNG imports from Africa and the Middle East, which in 2009 were the source of 77% (3.1 mb/d) of China's total crude oil imports, pass through the Strait of Malacca (IEA, 2007; US EIA, 2008). In addition to the threat of disruption from pirate activity, the risk of oil spills and even blockage of the transport lanes from shipping accidents is high.

There is increasing concern in China regarding the country's rapidly growing reliance on the vulnerable Strait of Malacca (Figure 9) — and on the substantial presence maintained there by the US Navy and the co-ordinated presence of Indonesia, Malaysia and Singapore to protect the strait from terrorism and piracy. Investments by NOCs in transnational pipelines could provide alternatives to diminish the reliance on the Strait of Malacca and diversify its imports from other sources, such as Russia and Central Asia, to bring oil and gas imports from new routes described in this section.

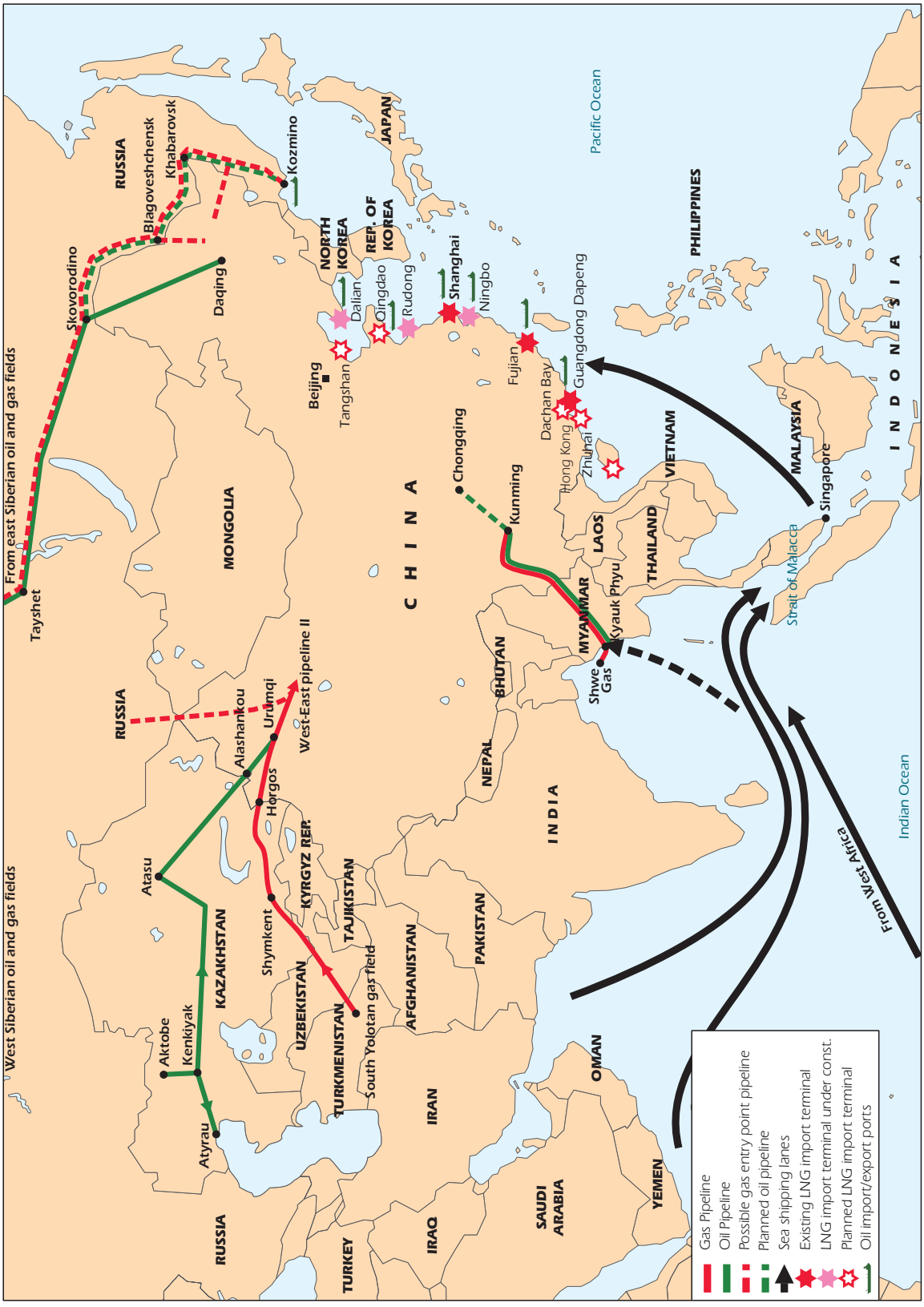
From the North

The NOCs have aimed to import Russian oil since the early 1990s, when it became clear that China would be unable to rely solely on domestic resources. At the same time, Russia has also been looking to diversify its oil and gas export markets, and to reduce its dependence on the European market. Benefiting from the geographic proximity, East Siberian oil would be ideal to support the growing markets in East Asia and the Pacific Rim. The Russian national government has been keen to support – and to control – exports, as oil is the single largest contributor to the national revenue stream (Rosner, 2010). Additional benefits to Russia from building an oil and gas pipeline network and the new port in Kozmino would be to promote economic development of the sparsely populated Russian Far East, through the projects themselves and trade with East Asia and the Pacific Rim.

The negotiation process between the two countries was long and dogged by mistrust and unfortunate pitfalls. In 1996, China and Russia signed energy co-operation agreements that included an oil pipeline from East Siberia to Daqing. After several more years of negotiation, CNPC and the private Russian firm Yukos signed an agreement to jointly construct the Angarsk-Daqing pipeline in 2003 (Seaman, 2010). The political battle between then Russian President Putin and the head of Yukos, Mikhail Khodorkovsky, ended that deal.

[10] Alternative routes exist, but they require more travel time, are more costly and enjoy less protection.

Figure 9: Current and future routes for China's oil and natural gas imports



The boundaries and names shown and the designations used on maps included in this Information Paper do not imply official endorsement or acceptance by the IEA.

Source: IEA research.

It was not until February 2009 that China and Russia signed a long-term oil supply deal worth USD 25 billion (see Annexes, 2. *China's loans for long-term oil and gas supply signed since January 2009*). Through this agreement CNPC not only secured a 300 kb/d supply of Russian oil for 20 years, it also gained access to Eastern Siberian oil through a long-desired pipeline. The 1 030 km-long pipeline that links the East Siberia-Pacific Oil (ESPO) pipeline to the Daqing refinery complex via Skovorodino will have a capacity of 300 kb/d.[11] Transneft will receive a USD 10 billion loan from China to build the 65 km-long section of this branch from the ESPO pipeline that will be located in Russia. Most of the length of the pipeline, 965 km, is located inside China. CNPC completed that section inside of China in June 2010, and it is reported that oil started to flow on 1 January 2011.

Sealing the oil pipeline deal after so many years of negotiation was partly the result of a high degree of motivation by both the Russian and Chinese NOCs (Rosneft, Transneft and CNPC). CNPC, for instance, needs the pipeline to offset declining production from the Daqing oilfields. The Russian companies seek access to new markets to diversify their customer base. The deal was sealed when the China Development Bank stepped in with financing.

Even before a pipeline deal could be reached, oil began to move by rail and by sea from Russia to China. In 2009 and the first half of 2010, China imported 306 kb/d and 297 kb/d from Russia, respectively. Russia is one of the top five crude suppliers to China and at full capacity the ESPO spur could raise total deliveries from Russia to 600 kb/d, making Russia the third-largest supplier of crude to China, displacing Iran. By 2015, this pipeline could transport 9% of China's crude import. China may import as much as 6.4 mb/d of crude oil in 2015 (IEA, 2010b).

At present, China and Russia are still in talks about the proposed gas pipeline, with negotiations on price still ongoing, and the sources of supply and pipeline routes still to be determined. Gas from Russia is expected to be delivered via three possible routes, one from West Siberia, and the others from East Siberia and the Russian Far East region. The eastern route would supply 38 bcm compared to 30 bcm for the western route (IEA, 2010b). It is expected that East Siberian gas will begin flowing to China sometime after 2015.

From the West

Central Asia offers China the opportunity to supplement the oil imports that will continue from the Middle East, and to significantly expand supplies of natural gas. CNPC has been the main player to date; the majority of China's equity oil (317 kb/d) in Kazakhstan belongs to CNPC. Sinopec and CIC's shares are minimal by comparison.

China's first transnational oil pipeline is the 2 200-km Kazakhstan-China Oil Pipeline that connects Kazakhstan's Caspian Shore to the Chinese border at Alashakou in the Xinjiang Uygur Autonomous Region. The pipeline has enabled China to import oil directly from its Central Asian neighbour and Russia's West Siberian region; by 2015, this line could account for 6% of China's total crude imports. The two countries agreed on this pipeline in 1997, and the 450-km, 120 kb/d first stage, from the Aktobe region's oil fields to Atyrau, was completed in 2003. The 990-km, 200 kb/d second stage, from Atasu to Alashankou, was completed in 2005 at a cost of USD 700 million; it may be upgraded to 400 kb/d in 2011. The 790-km Stage 3 from Kenkiyak to Kumkol was completed in 2009 (Figures 5 and 8). CNPC and the Kazakh oil company Kazmunaigas took equal shares in the pipeline, though some reports suggest that CNPC paid for 85% of the total cost.

[11] The pipeline capacity can be doubled to 600 kb/d in the near future.

Another crude pipeline operated by CNPC is the Alashankou-Dushanzi Crude Oil Pipeline, which is a 246-km pipeline connecting the Kazakhstan-China oil pipeline with Dushanzi District. This line has 200 kb/d capacity.

The first gas pipeline from this region, the Central Asia-China Gas Pipeline, starts in Turkmenistan and traverses Uzbekistan and Kazakhstan, connecting to gas fields in each of these three countries, and enters China in the Xinjiang Uygur Autonomous Region, where it connects to the second phase of China's domestic West-East pipeline (Figures 9 and 10).

In 2007, CNPC secured a production sharing agreement (PSA) for reserves on the right bank of Amu Darya river (Eastern Turkmenistan) and a natural gas purchase agreement for 30 bcm/y per year for 30 years,[12] as well as a gas pipeline from Turkmenistan to China. In the same year China signed a transit agreement with Uzbekistan and Kazakhstan for this pipeline (IEA, 2008). The USD 4 billion loan from the China Development Bank to Turkmengaz to develop the South Yoloten gas field (Block A and B) further enhanced the co-operation agreement. The entire pipeline extends 7 000 km across four countries with a total cost estimated at USD 7.31 billion. CNPC, the NOC which is highly involved in E&P activities in the region, demonstrated strong technical capacity and ability to complete this longest pipeline in the world in record speed.

The Central Asia-China Gas Pipeline was inaugurated on 14 December 2009 by the Chinese President Hu Jintao in Turkmenistan. Gas started to flow into China in January 2010 and it is expected to supply China at 30 bcm level to begin with and then ramp up to 40 bcm by 2013/2014. Only time will tell if Turkmenistan is a reliable supplier to fulfil the contract terms.

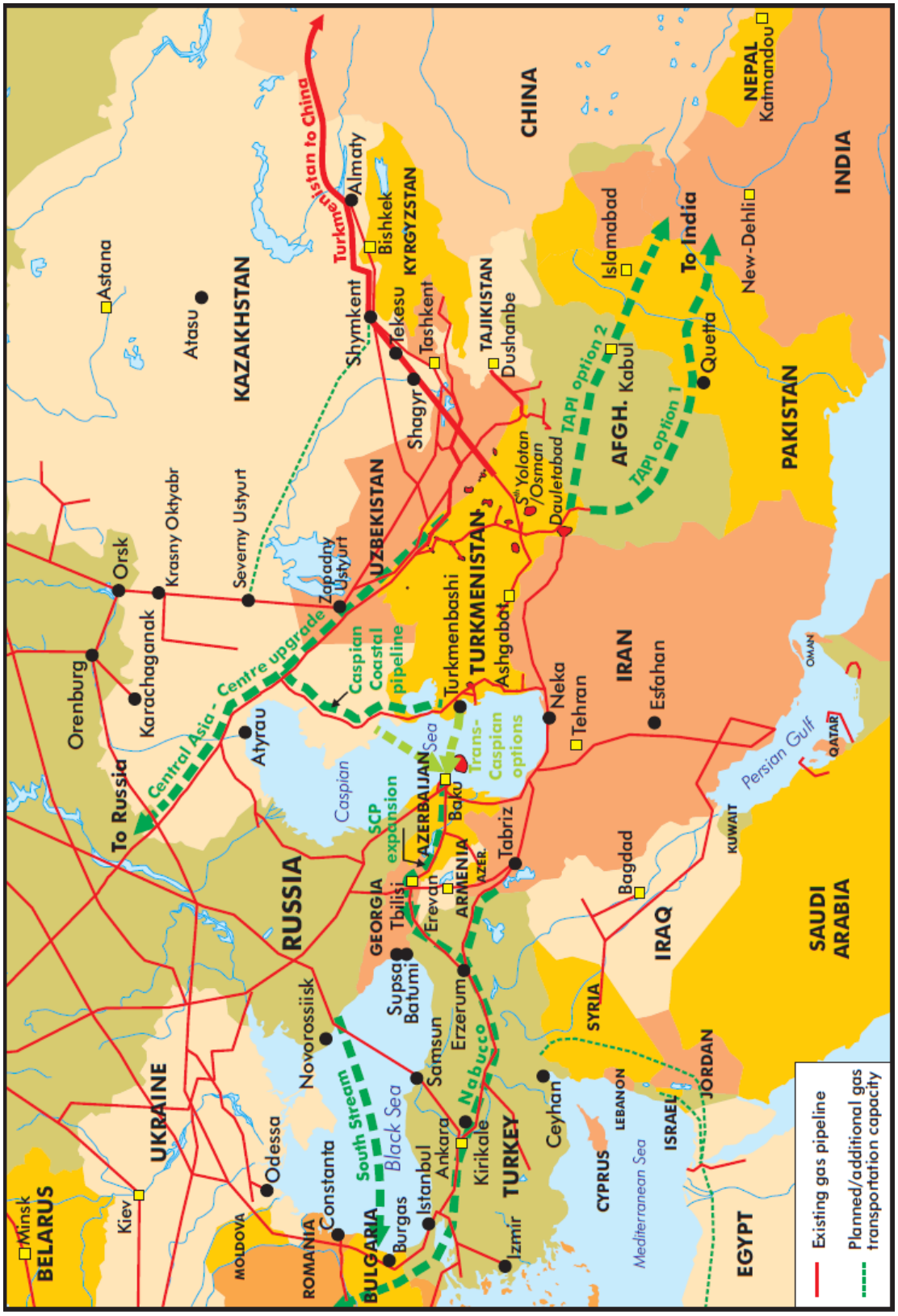
The success in securing the pipelines and oil and gas supplies directly from Central Asia should be credited in part to the Chinese government's long-term lobbying efforts in the region to influence its economic development and energy policy. It also changed the energy co-operation landscape for Central Asia. China is a founding member of the Shanghai Co-operation Organisation (SCO) with members Kazakhstan, Russia, Tajikistan, Kyrgyzstan and Uzbekistan. China has a comprehensive policy in Central Asia that goes beyond oil and gas. Chinese companies from all industry sectors are working with or trading from these countries. Broader co-operation on issues pertaining to regional stability and cross-border security has built a relative sound environment of mutual trust (Seaman, 2010).

The pipelines also changed the energy co-operation landscape for Central Asia and the global energy supply pattern from this region (Rosner, 2010). The capacity of the Central Asia-China Gas Pipeline exceeds that of the EU's planned Nabucco Pipeline (31 bcm) by 25%, and creates for the first time a physical pipeline link between the Chinese market and the European and Russian markets. It makes Turkmenistan a hub between the Atlantic and the Pacific (IEA, 2010b).

CNPC may have an interest in eventually linking this gas pipeline to Iran, as it has significant investments there (see Section 2, I*nterests, Why are China's NOCs going abroad?*). The existing gas pipeline allows Iran to import 20 bcm of natural gas from its neighbour Turkmenistan; in the short term, Iran is likely to remain a net gas importer despite huge reserves. However, if Iran were to abandon LNG projects that depend on foreign proprietary technology and decided instead to develop the offshore reserves and recent onshore discoveries by linking them into the onshore pipeline network, significant gas might be available for export. Whether this gas flows west or east may depend on how successful the current Turkmenistan-China pipeline proves to be and, separately, whether a political solution is found for Iran's nuclear power and uranium enrichment programme.

[12] Later reported as 40 bcm/y.

Figure 10: Central Asia gas network



The boundaries and names shown and the designations used on maps included in this Information Paper do not imply official endorsement or acceptance by the IEA.

Source: IEA research.

China's rising demand also presented an opportunity to the Central Asian states that in the past relied on Russia for sales of 90% of their gas, both to Russian customers and, indirectly, to European markets. A new long-term customer, China, could help Central Asia to diversify energy export markets and give them more bargaining power with their traditional customers, Russia and Iran, and their potential future customers in Europe.

China is aiming to increase the share of natural gas in its energy mix to 8.3% by 2015 from 4% at 2009. Turkmenistan has the world's fourth-largest gas reserves. An interdependent commercial relationship could help both countries to achieve their goals. For China, to ship gas through pipelines could avoid LNG imports through the Strait of Malacca, particularly LNG imports from Qatar. China's Xinjiang province, rich in energy resources itself, could benefit from the oil and gas pipeline and the economic development it brings to stabilise the region, where ethnic tensions surface from time to time.

It is not clear how quickly Turkmenistan will be able to ramp up exports to the full contractual volumes (IEA, 2010b). It will depend on the speed of development of CNPC's production in Turkmenistan and that of South Yolotan field.

From the South

The last piece of the puzzle is the building of a gateway to short-circuit the long sea travel, thereby avoiding the Strait of Malacca and supplying China's landlocked southwest region. This time China has found a willing partner: Myanmar, which has access to the Indian Ocean and extensive gas reserves (the world's tenth largest).

CNPC and Myanmar's Ministry of Energy have signed a MOU (June 2009) to construct, operate and manage the parallel Sino-Myanmar Oil and Gas Pipelines. The oil pipeline with capacity of 440 kb/d requires an estimated USD 1.5 billion investment. The 12 bcm capacity gas line will require USD 1 billion investment.

The oil pipeline will start at the Kyaukpyu port of Arakan coast in the Bay of Bengal. By the end of October 2009, CNPC had already started to construct the unloading wharf and terminal. This 1 100-km pipeline will link the Indian Ocean with China's southwestern province of Yunnan. It will enable China to transport oil imports from the Middle East and Africa to China, avoiding passing through the narrow Strait of Malacca and saving 1 200 km of travel distance and the associated cost.

The parallel gas pipeline will draw gas from blocks A1 and A3. However, these fields are only expected to produce after 2013. The pipelines are to be completed by 2013/14, and could transfer 7% of China's crude import in 2015. The construction of both pipelines was reported to commence in June 2010. Even though the 440 kb/d capacity only accounts for 14% of China's imports from Africa and the Middle East at 2009 levels (3.1 kb/d), the oil pipeline opens a gateway to China's Southwest region that traditionally has depended on receiving oil products from China's refinery on the eastern coast. Direct transport of oil to the region could boost new regional refinery business opportunities. CNPC is already building refineries in Kunming and Chongqing.

China's deal in Myanmar received international attention from human rights groups given Myanmar government's poor human rights record, but the project has proceeded nevertheless. Selling gas to China could diversify Myanmar's gas export dependency on Thai consumers and also help Myanmar's government generate income. An estimated 40% of government revenue comes from gas exports. According to the US scholar Bo Kong, the Myanmar-China Pipelines are likely to generate about USD 1 billion or more in annual revenue for Myanmar's government over 30 years. In addition, CNPC will pay the Myanmar government sizeable transit fees which could reach USD 15 million annually (Kong, 2010). The pipelines will run across Myanmar before entering China.

Dependence on the Malacca Strait

The investments by the NOCs in China's neighbours – each project undertaken mainly for commercial concerns and none exclusively for policy considerations — may aid China to significantly reduce the share of its oil imports shipped through the Strait of Malacca. This does not mean, however, that the Strait will become less important to China, as it is only the *share* of imports travelling through it, not the total volume, which will fall. Even were China to utilise these new routes to the fullest, the scope is limited to radically shift its oil supply lines away from the Strait.

Many observers have commented that the energy investments in China's neighbouring countries are changing energy supply patterns and may have profound impacts on regional political and economic relations in North Asia, Central Asia and Southeast Asia. Certainly these investments seem to enhance economic development for the partners involved. China gains energy supplies, while the host countries gain infusions of capital and access to markets. While the host countries have welcomed these new relations with China, worries that other trade partners will be shut out seem unwarranted thus far. In the case of the Central Asian republics, for instance, the new links with China are clearly being used to balance the previous dominance of ties to Russia, not to replace those ties. Russian suppliers have made it clear that they are looking at the wider East Asian and Pacific market. In the case of Myanmar, there are few significant existing energy trade ties to replace. Still, there are certain realities for China, among them the importance of the Strait, that will not change.

The Myanmar oil pipeline (expected to become operational in 2013 or 2014) will carry less than 500 kb/d and Kazakhstan-China Oil Pipeline has 400 kb/d capacity. Assuming by that time the pipeline capacity from Russia is expanded to 600 kb/d as planned, China's total pipeline imports of oil could reach 1.44 mb/d, or 23% of estimated crude imports in 2015 (6.4 mb/d; IEA 2010b). Although oil transported from the Myanmar pipeline would still need to be purchased in Africa or the Middle East, China would be able to reduce its reliance on the Strait of Malacca to about 54% of its total crude imports, down from the current level of 77%. This still means, however, that imports passing through the Strait would rise from somewhat over 3.1 mb/d currently to nearly 3.5 mb/d in 2015.

China is already less dependent on the Malacca Strait for its LNG supplies than for oil, as the majority of LNG shipments (based on existing and future contracts) would still come from Australia, Papua New Guinea, Indonesia and Malaysia. The recent investments by the NOCs will make it even less dependent, as they have helped China to secure a total of 120 bcm of natural gas by 2015, which could account for 52% of China's demand. This assumes that the two routes from Russia are completed (total 68 bcm/y), all pipelines are used in full capacity, and China's demand in 2015 is 230 bcm according to CNPC's forecast.

5. Conclusions

From investing in "leftover"[13] assets in politically risky areas of the world in the 1990s, to partnering with IOCs to jointly bid for projects and acquiring assets, China's NOCs have undergone a remarkable transformation into globally competitive energy companies. With more experience in foreign operations, skilled workforces and strong financial backing, they are able to acquire better quality assets, are working in partnership with other NOCs and IOCs, and have established successful track records. Success has given the NOCs confidence in their global quest. Evidence regarding the prices China's NOCs have paid for assets is mixed; in some cases, they may have paid above market values, but recent economic conditions, good financial performance, and growing experience with international deals have allowed them to maintain an assertive resource investment stance. The question of whether, and under what circumstances, they are paying premiums for their investment has not been answered conclusively, and requires further investigation.

The NOCs investment in global upstream assets has and will continue to contribute significantly to expanding global oil and gas supplies. The NOCs overseas acquisitions have already accounted for 13% of total global M&A deals in the sector in 2009 and for 20% in Q1 2010. Their investments brought much-needed financial resources in the wake of the global financial crisis. The loans extended to Russia will fund the development of Russia's Eastern Serbian oil and gas fields, which will supply the Asian and Pacific Rim markets. NOCs activities and investments in Central Asia contributed to the growing oil and gas production in that region. Their investments in the Middle East and participation in developing of Iraqi oil fields will contribute to projected incremental crude production as well. In 2010, NOCs invested nearly USD 16 billion in Latin America, contributing to development of the oil and gas industry in that region.

Despite the increase in their equity production volume overseas, NOCs are still dependent on the international market to purchase most of the oil imported to China. The Middle East is and will continue to be the largest crude oil supplier to China for years to come. Moreover, a significant proportion of the overseas equity production of China's NOCs is sold into the market rather than sent to China, though it is not possible to say with precision what that fraction is.

Chinese NOCs investments in the downstream sector, particularly in transnational pipelines, will add new dynamics to regional energy supply patterns, affecting the political landscape and economic development in neighbouring regions. However, the NOCs will still have to depend on seaborne trade, including through the Strait of Malacca, to bring in most of their imported oil.

Some questions remain unanswered in this paper. Future studies would need to be carried out with partners with deeper knowledge of the regions in which China's NOCs are investing (particularly Africa), as well as on governance issues and Chinese domestic markets. Specialised studies of particular interest would include:

- investments in Africa and in Latin America by China's NOCs in comparison with other NOCs and IOCs;
- impacts of foreign investments in the energy sector on the governance practices of African nations, again balancing analysis of the activities of China's NOCs and those of other NOCs and IOCs;
- motivations, roles and influence of the various parties to deals on transnational pipelines to China from Central Asia, Russia, and Myanmar;
- scenario analysis of possible supply disruptions, including impact on the relationship between the Chinese government and the NOCs;
- influence of Chinese domestic market trends on overseas investments by the NOCs; and
- comparison of the strategies followed by China's NOCs in their overseas oil and gas investments.

[13] NOCs often refer the earlier acquisitions they made as "leftovers" from the IOCs because of their late entry to the global M&A market.

6. Annexes

1. Chinese foreign oil and gas acquisition deals since 2002

Date	Company	Assets	Share	Deal size (USD billion)
December 2010	Sinopec	Acquired 18% of Chevron's Gendalo-Gehem deep water gas project in Indonesia	18%	0.68
November 2010	CNOOC	Acquired 60% of Pan America Energy from BP under Bridas which CNOOC has 50% share	60%	2.47
November 2010	CNOOC	Purchase 33.3% interest in Chesapeake's 600,000 net acres in the Eagle Ford Shale	33.3%	2.16
October 2010	CNOOC	Purchase 2/3 of Tullow Oil's stake in three blocks in Uganda with Total	2/3	Possibly more than 1
October 2010	Sinopec	Purchased 40% stake of Brazilian subsidiary of Spanish oil company Repsol	40%	7.1
May 2010	China Investment Corp. (CIC)	Will hold 45% of Canada's Penn West Energy Trust to jointly develop its bitumen assets in the Peace River region of Alberta, Canada.	45%	0.8
May 2010	CNPC	Purchased 35% stake of Shell's wholly owned subsidiary, Syria Petroleum Development BV. (SPD). SPD owns three production licences in Syria covering 40 oil fields with 23 kb/d output in 2009.	35%	Reported 1.2-1.5
May 2010	Sinochem	Purchased Statoil's 40% stake in Brazil's Peregrino Oilfield. Statoil will still retain 60%share and remain as the field operator.	40%	3.07
April 2010	Sinopec	Purchased 9.03% in Canadian oil sands company Syncrude from ConocoPhillips. TOTAL is the partner who holds 50%.	50%	4.675
March 2010	CNPC/ PetroChina and Shell	Joint bid for 100% share of Arrow Energy, Australia-based coalbed methane (CBM) producer.		3.13 jointly
March 2010	CNOOC	Purchased 50% stake in the Argentinean oil company, Bridas Corps., which has oil and gas exploitation operations in Argentina, Bolivia and Chile.	50%	3.1
October 2009	CNOOC	Purchased partial share of Norwegian's Statoil's US assets in deepwater areas of Gulf of Mexico.		0.1
October 2009	CIC	Purchased 45% stake in Nobel Oil Group to fund Russian expansion plans.	45%	0.3
September 2009	CIC	Purchased 11% stake in KMG by purchasing global depository receipts.	11%	0.939
September 2009	Xinjiang Guanghui Investment	Purchased Kazakhstan TBM's 49% share to jointly develop Zaysan block in eastern Kazakhstan.		0.3
September 2009	CNPC/ PetroChina	Purchased 60% of Athabasca Oil Sands Corps's Mackay River and Dover oil sands projects in Alberta, Canada.	60%	1.9
August 2009	Sinochem	Purchased 100% Emerald for assets in Syria and Colombia.	100%	0.878
June 2009	CNPC/ PetroChina	Purchased 96% of SPC (Singapore).	96%	2
June 2009	Sinopec	Purchased 100% of Addax.	100%	8.8
April 2009	CNPC and KMG	Purchased MMG in Kazakhstan assets with KMG.	100%	1.7 CNPC 3.3 total

Date	Company	Assets	Share	Deal size (USD billion)
2009	CNOOC and Sinopec	Purchased 20% stake for block 32 (Angola) from Marathon Oil.	20%	1.3
2008	Sinopec	Purchased 1005 of Tanganyika for assets in Syria.	100%	1.8
2008	CNOOC	Purchased 100% of Awilco.	100%	2.5
2008	Sinopec	Purchased 60% of Australia's AED oil for assets in Australia.	60%	0.561
2008	CNOOC	Purchase of 50% interest in Husky (Madura) Energy's assets in Indonesia.	50%	0.125
2008	Sinochem	Purchased 100% Soco Yemen for assets in Yemen.	100%	0.456
2006	CNOOC	Purchased 45% interest of OML 130 from South Atlantic Petroleum Ltd in Nigeria.	45%	2.3
2006	CNPC/ PetroChina	Purchased 100% of Block H in Chad from Swiss company Cliveden.	100%	0.48
2006	CNPC and Sinopec	Purchased 100% EnCana for oil and pipeline interest in Ecuador.	100%	1.47
2006	Sinopec	Purchased 97% of Udmurtneft for assets in Russia, then sold 51% to Rosneft.	46%	1.7 approx.
2006	CITIC Resources Holdings	Purchased 50% of JSC Karazhanbasmunai for assets in Kazakhstan.	50%	0.950
2006	CITIC Resources Holdings	Purchased 51% in Seram block in Indonesia through acquiring the assets from KUFOEC.	51%	0.0975
2006	Sinopec	Purchased oil sands projects by acquiring 50% of Ominex de Colombia with ONGC.	25%	0.4
2005	Sinopec	Purchased 50% interest in Northern Lights oil sands project.	50%	0.05 approx.
2005	CNPC (50%) and ONGC	Purchased 38% of Al Furat Production Company from PetroCanada.	19%	0.574
2005	CNOOC	Purchased 14.52% stake in MEG Energy for oil sand business.	15%	0.22
2004	CNPC	Purchased block 18 (Angola) from Angolan government when Shell exited Angola	50%	2
2004	Sinopec	Purchased petroleum assets from First International Oil Corporation in Kazakhstan.	100%	0.153
2003	CNOOC	Purchased 16.93% interest of Tangguh LNG project from BP and then sold 3.06% to Talisman.	14%	0.340
2003	Sinochem	Purchased 100% Atlantis from Norwegian Petroleum Geo-Service (PGS).	100%	0.105
2003	Sinochem	Purchased 14% interest in block 16 in Ecuador from ConocoPhillips.	14%	0.1
2002	CNPC/ PetroChina	Purchased Devon Energy Corporation for six blocks in Indonesia.	100%	0.585
2002	CNOOC	Purchase YPF Repsol's upstream assets (Southeast Sumatra etc) in Indonesia.		0.585

Total: 65. approx.

Sources: FACTS Global Energy (2010); Interfax; company websites; CNPC Research Institute of Economics & Technology (2010); IEA research; Chinese media reports.

2. China's loans for long-term oil and gas supply signed since January 2009

Country/Date	Lender	Borrower	Amount (USD)	Beneficiary/ Buyer	Notes
Angola 13 Mar 2009	CDB	Angola government	USD 1 billion for agriculture projects		Since 2002, China provided an estimated USD 5 billion in oil-related loans.
Bolivia Apr 2009		Bolivian government	USD 2 billion to build infrastructure		In return for energy contracts.
Brazil 18 Feb 2009	CDB	Petrobras	USD 10 billion - Interest rate may be 6%	Sinopec and its trading subsidiary Unipec	150 kb/d of oil in 2009; 200 to 250 kb/d from 2010 to 2019 at market price.
Brazil 15 Apr 2010	CDB	Petrobras		Sinopec	Petrobras and Sinopec to co-operate in expanding deep-water exploration, production, refining and transport.
Ecuador Jul 2009	CDB	PetroEcuador	USD 1 billion payment up front, interest possible 6.5%	CNPC/ PetroChina	96 kb/d for two years.
Ghana Jun 2010	CDB	GNPC		Sinopec	Sinopec and GNPC signed MOU on upstream, midstream and downstream related oil projects. The loans provided to GNPC are for the development of its offshore Jubilee Oilfield.
Kazakhstan 17 Apr 2009	CEIB	KMG	USD 10 billion	CNPC	USD 3.3 billion used to buy 49% of Manguistaumunaigas (MMG) from Indonesia's Central Asia Petroleum.
Russia 17 Feb 2009	CDB	Rosneft	USD 15 billion for 20 years Average rate of 5.69%	CNPC	300 kb/d for 20 yrs (2011-2030, 15 Mt/y +/-4.1%). Market price at Nakhodka port to CNPC. Pricing could be quoted monthly. Will sell 9 Mt to CNPC and 6 Mt to Transneft
	CDB	Transneft	USD 10 billion	CNPC	For construction of pipeline linking East Siberia-Pacific pipeline system (ESPO) at Skovorodino to Chinese Daqing oilfield. Capacity 600 kb/d, length 1 030 km. Transneft to build part in Russia (70km) and CNPC to build part in China (980 km). China part finished June 2010.
Turkmenistan Jun 2009	CDB	Turkmengaz	USD 4 billion	CNPC	40 bcm/y of natural gas for 30 years.
Venezuela 21 Feb 2009	CDB	Bandes (PDVSA)	USD 4 billion into a joint development fund	CNPC/ PetroChina	200 kb/d of oil to CNPC, market price, term contact, USD 1-2/b discount is offered, invoiced monthly.
Venezuela 17 Apr 2010	CDB	Bandes (PDVSA) and government	USD 10 billion and RMB 70 billion	CNPC	Petroleos de Venezuela and CNPC to form joint venture to jointly develop Junin 4 block. It will produce 2.9 billion barrels of heavy oil over the next 25 years. Also tied with infrastructure projects including freeways and power plants.
Total			**Approx. USD 77 billion**		

Sources: IEA research; FACTS Global Energy (2010); Interfax; CNPC Research Institute of Economics & Technology (2010); Chinese media reports.

3. Recent agreements requiring substantial future investment in the Middle East since 2008

Date	Company	Country	Project Detail	Notes
May 2010	CNPC/ PetroChina	Qatar	PetroChina signed a 30-year PSA with Qatar Petroleum and Shell to jointly develop natural gas in Qatar's Block D.	Shell will be operator, holds 75 % share. PetroChina holds 25%. In case of successful discovery, Shell and PetroChina to produce natural gas under supervision of QP, which agrees to buy all output.
May 2010	CNOOC	Iraq	Partnered with Turkish Petroleum (TPAO), won a technical service contract to develop Missan Oilfields. CNOOC holds 63.75% and is operator. TPAO and Iraq Drilling Company hold 11.25% and 25 % respectively.	CNOOC and TPAO to increase the daily output to 450 kb/d over six years. CNOOC will earn USD 2.3/b on incremental oil output once daily output increases by 10% from current level.
Dec 2009	CNPC	Iraq	Formed consortium with TOTAL and Petronas, won second-phase bidding. Will jointly develop Halfaya oil field for 20 years. (CNPC 37.5%, TOTAL 18.75%, Petronas 18.75%, Iraqi South Oil 25%)	Estimated reserve is 4.1 billion b/d. The consortium aims to increase production from 3.1 kb/d to 535 kb/d. Service fee is USD 1.4 per barrel after 70 kb/d.
Aug 2009	CNPC	Iran	MOU for buyback contract to develop South Azadegan field. (CNPC 70%, Inpex 10%, NIOC 20%)	CNPC to invest USD 2.25 billion and Inpex USD 0.25 billion for first phase of development.
Jun 2009	CNPC	Iran	Preliminary agreement to develop Phase 11 of South Pars field. (CNPC 40%, NIOC 50%, Petronas 10%)	Partners aim to produce 1.765 bscf/d natural gas and other products. CNPC to invest USD 4.7 billion.
Jun 2009	CNPC	Iraq	20 year service contract to develop Rumaila oil field. (CNPC 37%, BP 38%, Iraqi South Oil 25%)	Service fee of USD 2 per incremental barrel above baseline production of 1.75 mb/d. Consortium to pay USD 500 million soft loan to Iraqi treasury and commit USD 300 million to develop field in the short term. Long-term investment could be up to USD 20 billion for capital and operating expenses.
Jan 2009	CNPC	Iran	Buyback binding contract for exploration and Development of North Azadegan field for 25 years.	CNPC is expected to produce 75 kb/d in first phase and 150 kb/d in the second phase. It will invest USD 1.76 billion in the first phase and total investment increases to USD 3.5 to 4 billion in the second phase.
Re-signed in Nov 2008 (originally signed in 1997)	CNPC	Iraq	Exploration and development of Al-Ahdab oil field.	Plan is to produce 25 kb/d in 2011-2012, and to produce 110 kb/d for at least six years. CNPC will need to invest at least USD 1 billion for the exploration and development.
2008	Sinopec	Iran	In Dec. 2007, Sinopec signed a USD 2 billion deal to develop the Yadavaran field.	Under phase I, expected to produce 85 kb/d in four years, increasing by 100 kb/d in three years under phase II to reach 185 kb/d. Work started in Sep 2008.

Sources: IEA research; FACTS Global Energy (2010); Interfax.

4. China's long-term LNG contracts

Buyer/Supplier	Volume (bcm/y)	Duration	Status
CNOOC	**28.0**		
NWS, Australia	4.5	2006-30	Sales and purchase agreement (SPA) in December 2004. Delivery began in May 2006
Tangguh, Indonesia	3.5	2008-32	SPA in September 2006. Delivery started in July 2009
Malaysia Tiga	4.1	2009-33	SPA in July 2006. Delivery started in October 2009
Qatargas	2.7	2009-33	SPA in June 2008. Delivery started in October 2009
TOTAL	1.4	2010-24	SPA in January 2009, following an MOU in June 2008
Qatargas	4.1	2013-na	MOU in November 2009
Qatargas	2.7		Discussion as of November 2009
Queensland Curtis LNG, Australia	5.0	2014-33	SPA in March 2010
North Phase, Iran	n/a	20 years	Ongoing negotiations
PetroChina (CNPC)	**12.7**		
Qatargas	2.7	H1 2010s	MOU in November 2009
Qatargas IV	4.1	2012-35	SPA in April 2008
Shell, Gorgon, Australia	2.7	2014-33	SPA in November 2008, following an HOA in September 2007
ExxonMobil, Gorgon, Australia	3.1	2014-33	SPA in August 2009
Woodside, Browse, Australia	2.7-4.1	15-20 years	Cancelled in 2009
Sinopec	**2.7**		SPA in December 2009
PNG LNG	2.7	2014-34	
BG	1.4	2013-	Cancelled, after an HOA in June 2008

Source: IEA (2010b).

Abbreviations and Acronyms

AED	AED Oil Limited
Bandes	Venezuela's Social Development Bank
bcm	billion cubic meters
BP	British Petroleum
CBM	coalbed methane
CBRC	China Banking Regulatory Commission
CDB	China Development Bank
CEIB	China Export-Import Bank
CIC	China Investment Corporation
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
CPC	Communist Party of China
E&P	exploration and production
ESPO	East Siberia-Pacific Pipeline System
EU	European Union
FIOC	First International Oil Corporation
GDP	gross domestic product
GNPC	Ghana National Petroleum Corporation
HOA	Heads of agreement
IMF	International Monetary Fund
IOCs	international oil companies
JSC	joint-stock company
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs
KMG	Kazmunaigas
KUFOEC	Kuwait Foreign Petroleum Exploration Company
LNG	liquefied natural gas
M&A	mergers and acquisition
mb/d	million barrels per day
MMG	Mangistaumunaigas
Mt	million metric tons
MOU	memorandum of understanding

NDRC	National Development and Reform Commission
NEA	National Energy Administration
NEC	National Energy Commission
NIOC	National Iranian Oil Company
NOCs	National oil companies
OECD	Organisation for Economic Co-operation and Development
OMR	IEA *Oil Market Report*
ONGC	Oil and Nature Gas Corporation Limited of India
PDVSA	Venezuelan State Oil Company
PGS	Norwegian Petroleum Geo-Services
PNG	Papua New Guinea
PSA	production sharing agreement
QP	Qatar Petroleum
R/P ratio	reserves to production ratio
SASAC	State Assets Supervision and Administration Commission
SCO	Shanghai Co-operation Organisation
Sinopec	China Petroleum & Chemical Corporation
SOEs	state-owned (-invested) enterprises
SPA	sales and purchase agreement
SPC	Singapore Petroleum Corporation
TBM	Tarbagatay Munay
TPAO	Turkish Petroleum
USD	US Dollars
WTO	World Trade Organisation

References

CNPC Research Institute of Economics & Technology (2010), *Report on Domestic and Overseas Oil & Gas Industry Development in 2009*, Beijing: CNPC Research Institute of Economics & Technology.

Downs, Downs (2010a), "Sino-Russian energy relations, an uncertain courtship", *The Future of China-Russia Relations,* Part Two, No. 5, The University Press of Kentucky.

_____ (2010b), "Who's afraid of China's oil companies?", *Energy Security*, Chapter Four, Washington, D.C.: Brookings Institution Press.

FACTS Global Energy (2009), "China's overseas oil and gas investment , recent developments", FACTS Global Energy, Issue #33, 2009.

_____ (2010), personal communication with analyst, April.

Grieder, Tom (2010), *Enter the Dragon, China's Quest for Oil Overseas*, Lexington, MA: IHS Global Insight Inc.

IEA (2007), *Oil Supply Security, Emergency Response of IEA Countries*, Paris: International Energy Agency.

_____ (2008), *Natural Gas Market Review*, Paris: International Energy Agency.

_____ (2010a) *World Energy Outlook 2010*, Paris: International Energy Agency.

_____ (2010b), *Medium-Term Oil & Gas Markets*, Paris: International Energy Agency.

Kong, Bo (2010), *The Geopolitics of the Myanmar-China Oil and Gas Pipelines, Pipeline Politics in Asia, The Intersection of Demand, Energy Markets, and Supply Routes*, NBR Special Report #23, Seattle : The National Bureau of Asian Research.

Lewis, Steven W. (2007), *Chinese NOCs and World Energy Markets, CNPC, Sinopec and CNOOC*, Houston : James A. Baker III Institute of Public Policy, Rice University.

Naughton, Barry (1996), *Growing Out of the Plan, Chinese Economic Reform 1978-1993*, Cambridge: Cambridge University Press.

_____ (2008), *SASAC and Rising Corporate Power in China*, China Leadership Monitor, No. 24, Palo Alto: Hoover Institution, Stanford University.

PetroChina Marketing Company (2010), personal communication with company officials, Beijing, September.

PFC Energy (2010a), personal communication with energy consultant.

_____ (2010b), *Chinese NOCs, Global Expansion Drivers*, Washington, D.C.: PFC Energy.

Reuters (2010), "The US banned its firms from investing in Iran three years ago", 13 April.

Rosner, Kevin (2010), "China Scores again in Energy, Russia and Central Asia", *Journal of Energy Security*, January.

Seaman, John (2010), *Energy Security, Transnational Pipelines and China's Role in Asia*, Paris: L'Institut français des relations internationales (IFRI).

US Energy Information Administration (2008), *World Oil Transit Chokepoints*, www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Full.html, Washington, D.C.: US Energy Information Administration.

Wood Mackenzie (2010), "Chinese NOC's step-up international expansion", London: Wood Mackenzie Corporate Service, May 2010.

Xinhua News Agency (2010), China OGP, Xinhua News Agency, 1 August.

Xu, Xiaojie (2007), *Chinese NOCs' Overseas Strategy, Background, Comparison and Remarks*, Houston: James A. Baker III Institute of Public Policy, Rice University.

International Energy Agency

Online bookshop

Buy IEA publications online:

www.iea.org/books

PDF versions available at 20% discount

Books published before January 2010 - except statistics publications - are freely available in pdf

International Energy Agency • 9 rue de la Fédération • 75739 Paris Cedex 15, France

iea

Tel: +33 (0)1 40 57 66 90

E-mail:
books@iea.org

International
Energy Agency

9 rue de la Fédération
75739 Paris Cedex 15

www.iea.org