



CHATHAM HOUSE

TRENDS IN ASIAN NOC INVESTMENT ABROAD

WORKING BACKGROUND PAPER

March 2007

By Keun-Wook Paik, Valerie Marcel, Glada Lahn, John V. Mitchell and Erkin Adylov

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Trends in Asian National Oil Company Investment Abroad
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Keun-Wook Paik, Valerie Marcel, Glada Lahn, John V. Mitchell and Erkin Adylov
With research assistance from Mark Schaltuper and Paul Weimer

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Executive Summary

Note

This paper is the result of research conducted as part of a major Chatham House project on *Asian National Oil Company Investments Abroad: Industry trends and impacts on development*. The briefing paper, 'Oil for Asia' (John Mitchell and Glada Lahn), published March 2007 offers further analysis of the trends and their implications for competition and the world oil market.

The authors have done their best to provide accurate data but would be grateful for corrections of errors and omissions.

This report describes the recent trends of investment in foreign oil projects by companies from China, India, Japan, South Korea and Malaysia. Most of these companies are state-owned or state-controlled and have substantial downstream commitment¹ in their home countries. Their overseas investments are part of these countries' wider thrust into the world economy and are often specifically supported by governments, within the context of increasing bilateral economic and political relations. The Chinese ability to integrate oil and gas investments with general development loans and infrastructure investment has proved especially popular with governments in some African countries. A new scheme offers the possibility of cross investment with Middle East producers, allowing equity in the national downstream against upstream developments. In addition to this, Indian companies are pursuing mutual cooperation agreements with several producing country NOCs (and at least one IOC), offering of stakes in the Indian upstream in return for assets abroad. The South Korean and Japanese governments have announced their intention to co-ordinate more closely in their energy and general diplomacy and foreign economic relations.

As latecomers to the international upstream investment scene, competition between Asian national oil companies (ANOCs) is likely to increase in key oil producing regions where promising acreage is still available to foreign investors. Potential hotspots include Central Asia and West Africa. In some cases, ANOCs are collaborating with one another as part of bidding consortiums, joint venture companies or to acquire existing company assets e.g. Chinese, Indian and Malaysian companies in Sudan and Chinese and Indian companies in Syria and Colombia.

Wider politics have sometimes interfered with ANOC plans: Asian initiatives such as CNOOC's interest in acquiring the US company, UNOCAL, and CNPC's interest in the Russian company, Slavneft, and INPEX's interest in the Azadegan project in Iran have been frustrated. In a few cases, such as Sudan and Burma, sanctions and political sensitivities have limited competition from North American and European companies and therefore presented lucrative opportunities.

The Asian companies differ in character and scale. CNPC and SINOPEC are integrated companies with domestic refining needs outstripping their production possibilities in China. Equity interest in foreign crude may seem less risky than relying on supplies from the open international market. For PETRONAS, still an oil exporter, and CNOOC, mainly an offshore upstream company, the main driver is similar to that of a private sector company: to lengthen the life of reserves and profit from existing management and technical skills. Companies, such as PETRONAS, have focussed on exploration opportunities and control of the marketing chain, while Chinese and Indian companies have shown their desire to acquire existing minor and mid-size petroleum companies, with access to prime reserves, particularly in Russia and central Asia.

In world terms, the scale of the Asian activities is modest, even in relation to the rapidly growing Asian oil import requirements. From the limited data available, it seems that between 1995-2006, Chinese companies invested at least \$27bn in overseas upstream projects.² For comparison, the

¹ This means that the company is, to some extent, responsible for supplying national refineries (sometimes belonging to the company) with enough crude oil to meet demand.

² This figure is based on reported figures paid for oil projects only and is likely to be much higher - see table 1g and the Annex.

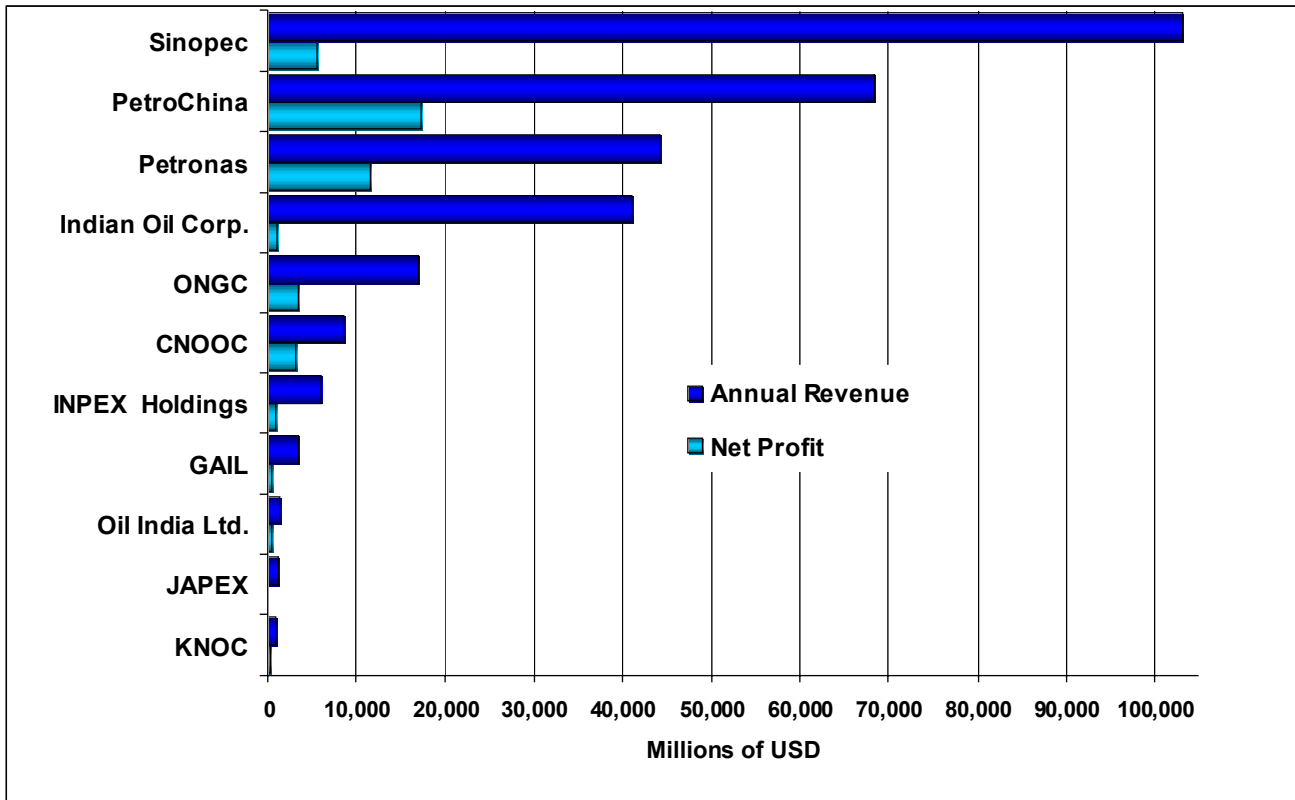
major US companies invested \$29.8bn in foreign upstream activities in 2004 alone.³ It appears that in the next five years, foreign equity production from all the ANOCs might reach 2-2.5mb/d – roughly 3% of today's world production. However, this might provide a significant 8-15% of the Asian home countries' imports (e.g. India, China). Although interests are widely spread, the major oil projects and near term production appear to be focussed in Angola, Nigeria, Kazakhstan and Iran.

³ EIA: Performance Profiles of Major Energy Producers 2004.

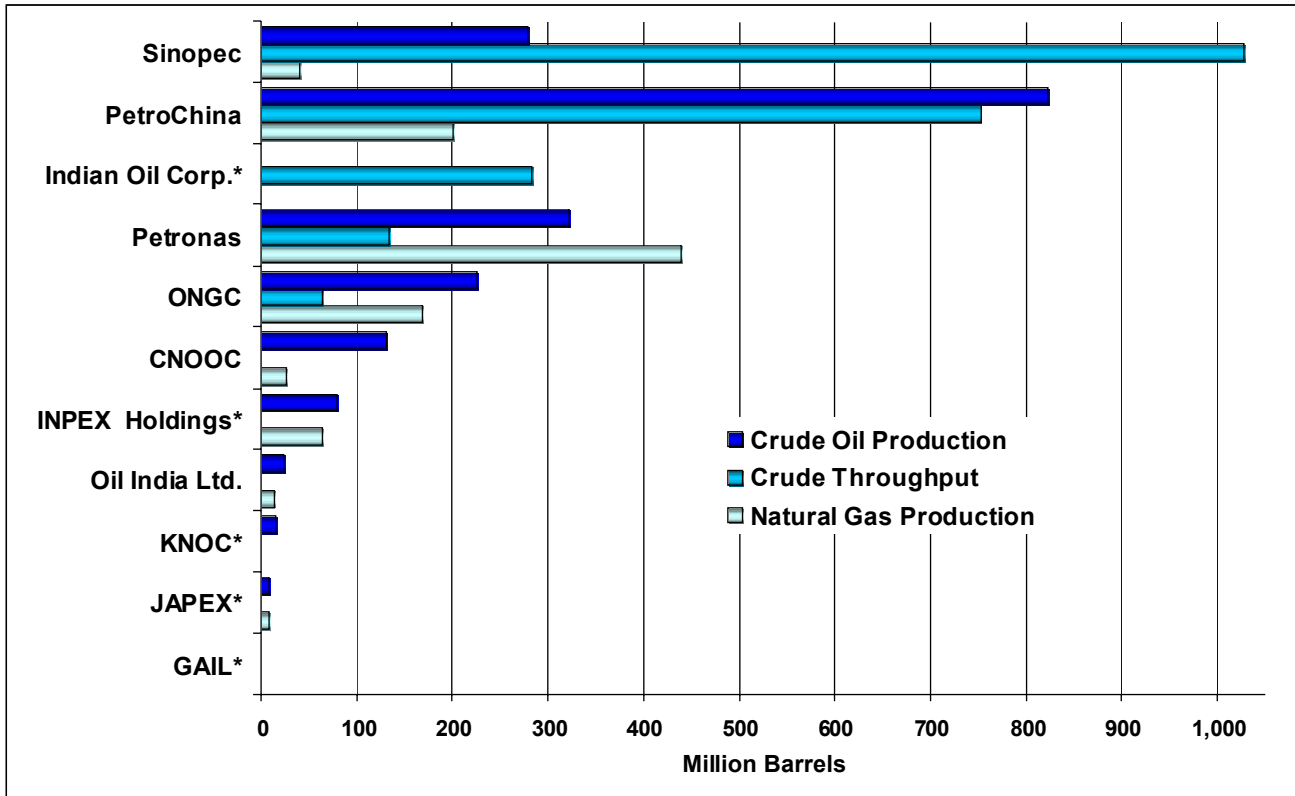
Asian Oil & Gas Company Comparative Data

* Some figures unavailable

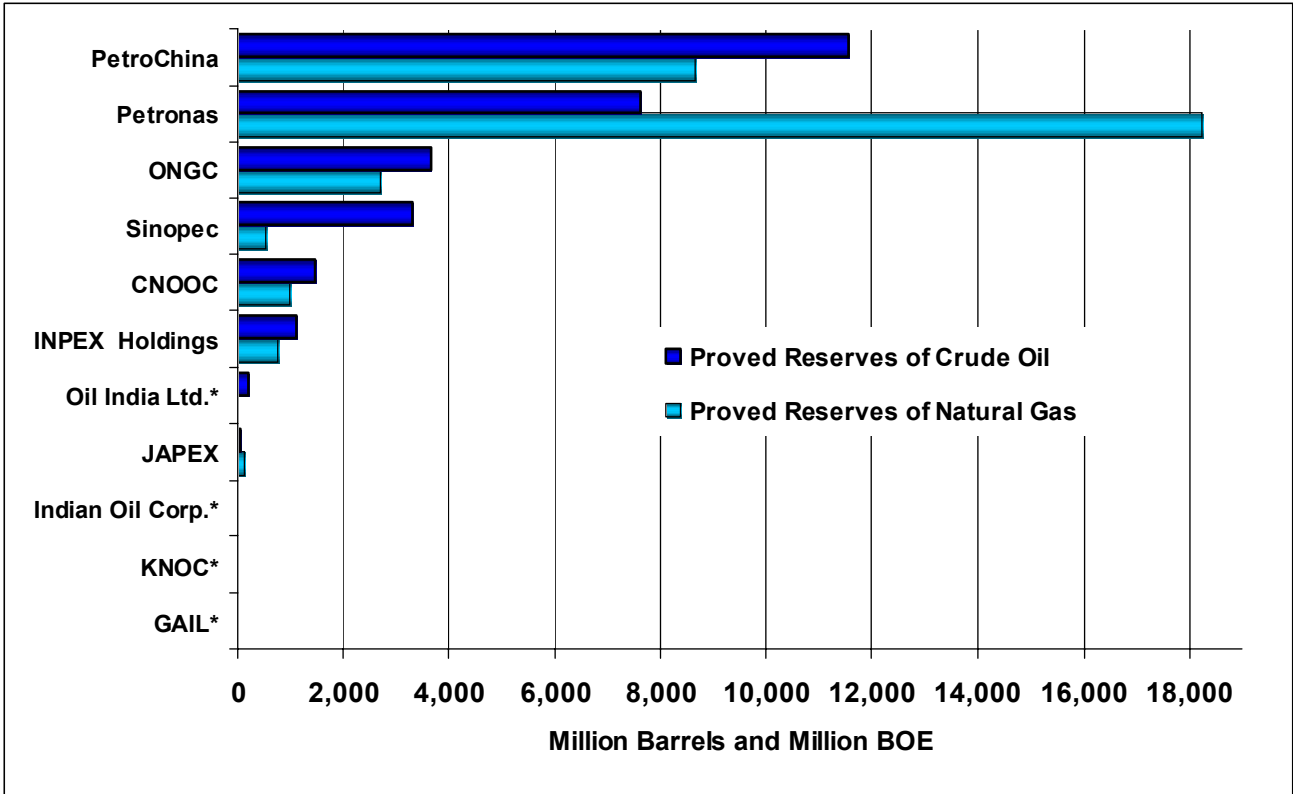
Revenues and Profits



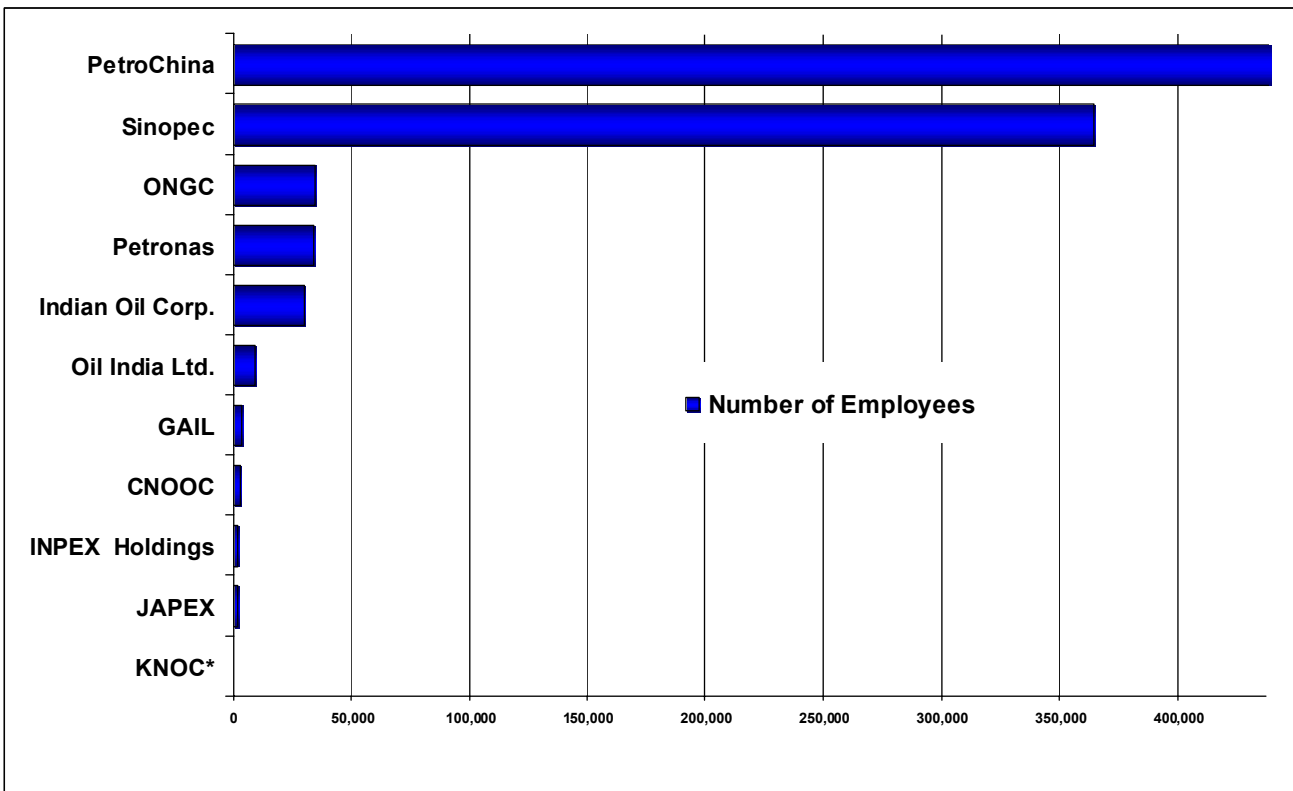
Oil and Gas Production and Refinery Throughput



Oil and Gas Reserves



Employees



1. Chinese NOCS

Overview of the Chinese national oil companies

In China, there are three main state-controlled energy firms, the China National Petroleum Corporation (CNPC), the China National Petroleum & Chemical Corporation (SINOPEC) and the China National Offshore Oil Corporation (CNOOC). In addition, Sinochem Corp. (formerly China National Chemicals Import & Export Corp.), China International Trust & Investment Corp (CITIC) and Chinese Aviation Oil Corp Ltd (CAO) are engaged in overseas oil and gas investment.⁴ The Great United Petroleum Holding Co Ltd (GUPC), China's largest private oil company with 100 billion yuan (\$13bn) worth of oil retail assets by grouping 30 private Chinese oil companies, the China International Petroleum Investment Union (CIPIU)⁵, a consortium of 50 mainland companies, and Chinese Petroleum Investment Fund Management Ltd (CPIFM) are also looking for investment opportunities abroad.

CNPC, including its publicly traded subsidiary, PetroChina, is China's flagship energy firm, employing more people than any other Asian NOC. It also recorded larger net profits in 2005 than its Chinese counterparts (see Table 1a). SINOPEC Corporation is an integrated energy and chemical company. It is China's largest producer and supplier of oil products and major petrochemical products and the 2nd largest national crude oil producer.

Table 1a

| Chinese NOCs in 2005 | | | |
|--|------------------------------|-------------------|--------------------------|
| | CNPC (PetroChina) | CNOOC Ltd. | SINOPEC Corp. |
| Percentage owned by the state | 90% | 70.6% | 77.42% |
| Annual revenues (USD Millions) | \$68,401.50 | \$8,603.07 | \$103,120.37 |
| Net profit (USD Millions) | \$17,296.55 | \$3,136.60 | \$5,430.18 |
| E&P revenue (USD Millions) | \$41,767.78 | \$6,616.51 | \$14,248.02 |
| Refining revenue (USD Millions) | \$53,074.79 | \$0 | \$59,962.59 |
| Overseas Investment in crude oil 1993-2006 (USD Millions) | \$15,440 | \$3,281 | \$8,356 |
| Annual crude oil production (million barrels) | 822.90 | 130.26 | 278.82 |
| Annual natural gas production (million BOE) | 201.51 | 25.59 | 39.94 |
| Year-end proved crude oil reserves (Million barrels) | 11,536.20 | 1,457.40 | 3,294.00 |
| Year-end proved natural gas reserves (million boe) | 8,662.16 | 977.56 | 531.31 |
| Number of employees | 439,220 | 2,696 | 364,528 |
| Parent company employees | 1,133,985 | 37,000 | 730,800 |

Sources: company annual reports for 2005.

Note: *Due to unavailability of data only publicly listed companies are included in the table. Their parent companies are 100% state enterprises that do not publish detailed up to date reports. *E&P and refining revenue figures includes inter segment sales. *Parent company employee figures include publicly listed company employees. *Overseas investments for the period 1993-2006 include deals in upstream, transportation, and refining. The figures do not include LNG deals, unless they were a part of crude oil deal.

⁴ CAO have invested in the overseas downstream only.

⁵ CIPIU, a group that includes investors from Indonesia, Saudi Arabia, Kazakhstan and Singapore invested in upstream projects in Indonesia and the Middle East in 2006.

Each of the 'big 3' NOCs have a subsidiary in charge of international E&P. SINOPEC Corp is listed on the Hong Kong, New York, London and Shanghai Stock Exchanges and 77.42% of its shares are held by the People's Republic of China (PRC) with 71.23% of total shares held through SINOPEC Group, a 100% state-owned energy holding company. CNOOC Ltd. is China's state-owned specialist offshore company, 70.6% of which is owned by CNOOC, the parent company, which in turn is 100% owned by PRC. The driving force of CNPC's overseas oil and gas exploration and development is its subsidiary, the China National Oil and Gas Exploration and Development Corp (CNODC). Until mid-2005, only some blocks in Indonesia belonged to PetroChina. A large share of overseas assets was then transferred into a new company called NewCo, with CNODC and PetroChina each holding 50% of the shares. Following this deal, most of the overseas assets could be considered jointly held by CNPC and PetroChina, while some assets, such as operations in Sudan, are held entirely by CNPC.

Structural reforms in the governance of the energy sector have taken place since 1998. These tried to reflect the need for greater domestic competition between the NOCs and international competitiveness. Under the 1998 reform, the upstream/downstream industry separation between CNPC and SINOPEC was abolished and each company was given control of integrated upstream and downstream operations based on a geographical division, with SINOPEC dominating the east and south, and CNPC dominating the northeast and west.

Energy governing bodies

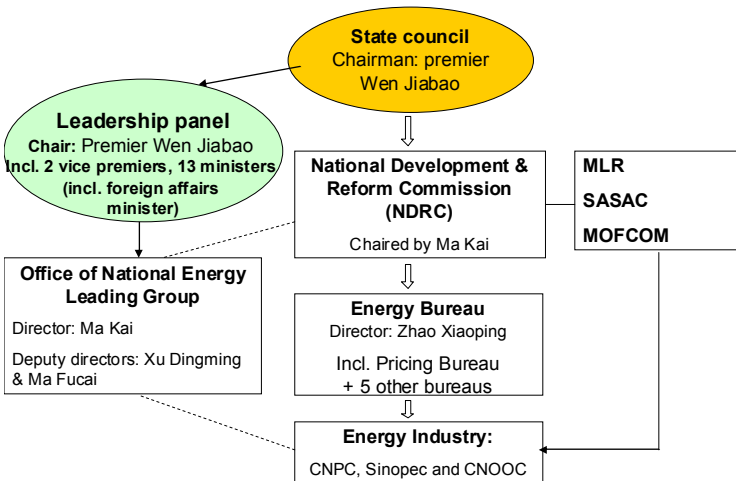
There are several government bodies involved in energy policy-making and regulation. The National Development and Reform Commission (NDRC) is China's most powerful planning agency. It is responsible for long-term energy planning, energy pricing and approval of domestic and foreign energy investments. Multiple departments within the NDRC have authority over the energy sector, including the Energy Bureau. Underscoring the central place of energy security in current policy-making, the National Energy Leading Group (NELG) was formed in mid-May 2005. The NELG is a supra-ministerial coordinating body headed by Premier Wen Jiabao that sets the general direction for energy sector development and provides the State Council – China's cabinet – with policy recommendations. The Office of National Energy Leading Group (ONELG), which is headed by Ma Kai, Minister of the NDRC, is in charge of the daily affairs of the NELG.

The Ministry of Land and Resources oversees the exploration and production of the mineral and oil and gas resources within the national territory. The MLR grants exploration and production licenses and conducts surveys of the country's natural resources. The State-owned Assets Supervision & Administration Commission (SASAC) regulates state assets held by state-owned enterprises (SOEs) to represent the government shareholder in SOEs and to promote the modernization of state enterprises. All managers of the state oil companies are appointed by the government, with SASAC playing a central role and the State Council making the final decision on all management personnel nominations.⁶ The Ministry of Commerce (MOFCOM) was established in March 2003 to oversee both foreign and domestic trade. MOFCOM sets import and export rules for national oil companies.

⁶ Energy Policy Act 2005, Section 1837: National Security Review of International Energy Requirements, Prepared by the U.S. Department of Energy, February 2006.

Fig 1b

China's energy decision-making structure



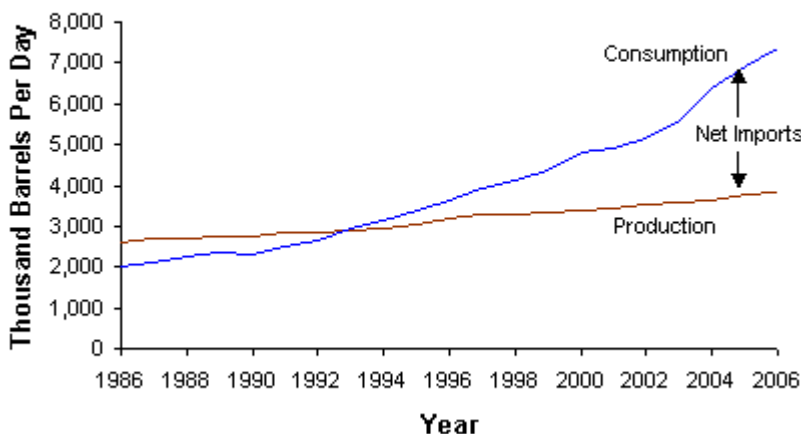
Drivers and strategies for international investment

i) The growing demand for energy

In 2004, China became the world's second largest oil consumer after the United States, with net oil imports accounting for 46% of domestic oil consumption. According to the International Energy Agency (IEA) projections, this dependency will rise to 77% by 2030.⁷ Phenomenal economic growth in China has made energy security one of the most important drivers of government policy.⁸ The US Energy Information Administration (EIA) estimates that China's oil demand in 2025 will be 14.2mb/d, double its 2006 level of 7.1 mb/d⁹ (see fig.1c).

Fig 1c

China's Oil Production and Consumption, 1986-2006*



Source: EIA *International Petroleum*

*2006 is Jan-Aug only

⁷ World Energy Outlook 2006, International Energy Agency, p. 101.

⁸ World Energy Outlook 2006, IEA, p. 516. Note that the IEA's WEO estimates about 10 mb/d (497 million tonnes) in oil demand for 2015; for 2020, the Energy Research Institute, National Development and Reform Commission in China projects 480-520mt and CNPC projects 450mt.

⁹ *China: Country Analysis Brief*, (2005), Energy Information Administration, <http://www.eia.doe.gov/emeu/cabs/china.html>, accessed 24 July 2006.

'Oil Market Report', February 13, 2007, International Energy Association, <http://omrpublic.iea.org/>. Note that latest figures from the IEA's World Energy Outlook 2006 predict that China's oil demand will reach 758 million tonnes (15.2mb/d) by 2030.

ii) China's massive foreign-exchange reserves set to top US\$1 trillion

Chinese NOCs have no shortage of capital and the Chinese banks can provide them with low rate loans for overseas investments.

According to the Wall Street Journal (Oct 17, 2006), as of September 30, China's foreign exchange reserves totalled US\$987.9 billion, and are growing by about US\$20 billion a month. Roughly 70% of these reserves are believed to be in US dollar assets, 20% in euros and 10% in other currencies, including the yen and South Korean won. As of August 2006, China held US\$339 billion of US Treasury securities, making it the US's second largest foreign creditor after Japan.¹⁰ Although China does not yet use these reserves to fund state companies' overseas investment, Chinese policy-makers have expressed concern at 'putting all their eggs in one basket' (of foreign financial assets). China's Vice-President, Zeng Qinghong, advocates allowing a proportion of the foreign currency reserves to be made available to Chinese companies needing foreign currency to make direct investments abroad or to buy raw materials that China lacks. Securing sizable proven oil and gas assets is considered a safer repository for foreign exchange earnings and can contribute to keeping the value of the Chinese yuan stable.

Investment strategies

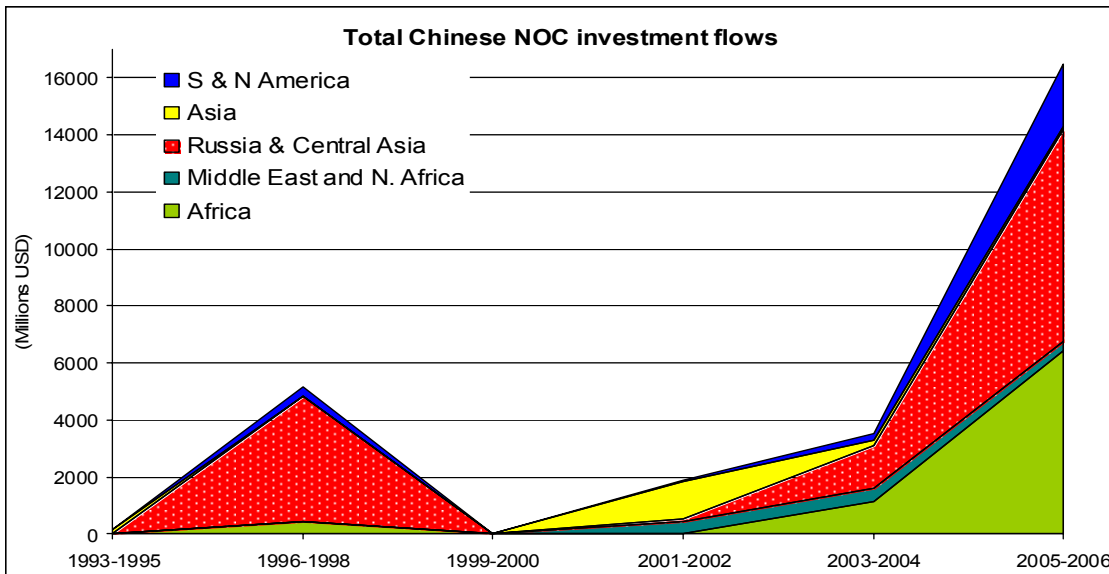
Chinese NOCs began to explore the possibility of acquiring foreign assets in 1993, around the time that China became a net oil importer. A sharp decline took place in overseas investment flows between 1998-2000. This was mainly due to the descent of the oil price. A low of \$9-10 per barrel damaged the enthusiasm for overseas oil investment and China's policy changed. It was believed that to import oil was cheaper than to invest in oil fields abroad.

Several other factors contributed to a rethink in China's overseas strategy. CNPC pulled out of a \$400 million deal for developing the Uzen oil field in Kazakhstan in 1998. The government of Kazakhstan did not want to give CNPC permission to develop Uzen until they had committed to building the 3,277km trans-Kazakhstan oil pipeline. CNPC argued that there would not be enough volumes to transport to make the pipeline investment worthwhile so the programme was suspended until 2004.¹¹ More generally, CNPC's overpayment on Kazakhstan and Venezuelan deals during the 1997-98 period prompted a phase of caution for Chinese NOC investment. These deals were a blow to CNPC as the amount invested was significantly higher than the value of actual production. This led CNPC's vice president for international business to prioritize the production capacity of targeted assets. It was not until CNPC demonstrated their success in Sudan (as part of the Greater Nile Petroleum Operating Company) in 1999 that the State Council endorsed CNPC's aggressive oil production asset buy-out strategy.

Since 2000, investments in Russia - Central Asia (RCA) and Africa have been steadily increasing. Although Figure 1d shows that investments in South and North America are increasing, the projects there are small-scale or in the early stages of development, such as the oil sands projects in Canada. The graph suggests that since 2003, China's NOCs have been directing most of their investments to RCA and Africa. The importance of Africa to China's energy security is clear in terms of both investment flows and supply. For example, it is significant that Angola has emerged from years of civil war to overtake most Middle East and North Africa (MENA) countries as one of China's top crude oil suppliers (Angola was China's number one supplier behind Saudi Arabia for the first ten months of 2006).

¹⁰ www.ustreas.gov/tic/mfh.txt, accessed 8 November 2006.

¹¹ 'Kazakhstan, China Revive Pipeline Deal', Michael Lelyveld, *Middle East Economic Survey* VOL. XLVII, No 29, 19-July-2004.

Fig. 1d

Source: Chatham House research (2006)

Note: The lines on the chart connecting the year to year points on the horizontal axis do not necessarily represent investment amounts, but rather, were drawn to emphasise the investment trends towards certain regions. Investments were calculated from publicly available data and account only for amounts promised or agreed.

We should note that the distribution of investments between countries in each of the five geographic regions is not uniform (see also Annex, Table 1e). For example, investments to Sudan, Nigeria and Angola account for about 94% of total NOC investments in Africa, and Russia and Kazakhstan account for 83% of all investments in RCA.¹² Even though CNPC's total investments in Russia and the Central Asian Republics are recorded at over \$9.1 billion, the majority was poured into the central Asian republics, Kazakhstan in particular, due to Russia's reluctance to open its upstream sector (see also section on rising nationalism, p.15). The proliferation of small-scale projects in MENA, Asia and South and North America is likely to be due to stronger competitive pressures and limited upstream opportunities (see Annex, Table 1f) for the total number of projects each company has in five regions of the world). CNPC dominates these Chinese NOC investments, with 74 international projects with a total investment value of about \$15.4 billion, almost twice as much as SINOPEC and over four times that of CNOOC (see table 1g).

Table 1g

| Aggregated Chinese NOC Investments Worldwide 1995-2006 (Millions of US\$) | | | | | | |
|---|---------------|--------------|--------------|---------------|--------------|---------------|
| Note: only reported investment figures were used | | | | | | |
| NOC | Total | Africa | MENA | RCA | Asia | S & N America |
| CNPC | 15,440 | 2,599 | 795 | 9,159 | 810 | 2,077 |
| SINOPEC | 8,356 | 3,101 | 464 | 4,220 | 21 | 550 |
| CNOOC | 3,281 | 2,289 | 0 | 0 | 972 | 122 |
| TOTAL | 27,178 | 7,989 | 1,259 | 13,379 | 1,803 | 2,749 |

Source: Chatham House research (2006)

The amounts invested can be contrasted to the estimated production capacities of the assets acquired, which are reproduced in Table 1h. However, investments are based on disclosed information per project only. These amounts are bound to be higher as no data is available for

¹² Note that much of the financial data was not available, thus the figure represents only a rough estimate which is bound to be slightly smaller.

several projects and further investment committed after an initial bid is not always reported. Equity production in this table was calculated based on (current asset production + estimated future production) x (Chinese percentage share of the asset) = Chinese NOC equity production.

Table 1h

| China's 2013-2015 overseas equity crude (Barrels/d) | | | | | | |
|---|-----------|---------|---------------------------|-----------------------|---------|---------------|
| Note: Includes both current and potential future production ¹³ | | | | | | |
| NOC | total b/d | Africa | Middle East and N. Africa | Russia & Central Asia | Asia | S & N America |
| CNPC | 733,819 | 244,000 | 33,675 | 247,683 | 60,774 | 147,688 |
| Sinopec | 230,590 | 105,000 | 28,125 | 52,515 | 0 | 44,950 |
| CNOOC | 142,562 | 78,750 | 0 | 0 | 59,640 | 4,173 |
| Sinochem | 7,980 | 0 | 0 | 0 | 0 | 7,980 |
| TOTAL | 1,114,952 | 427,750 | 61,800 | 300,198 | 120,414 | 204,791 |

Source: Chatham House research (2006)

It is interesting to compare investments in Africa with those in Russia and Central Asia (RCA). Based on the reported data, Chinese NOCs have invested \$13.4 billion in RCA and \$8 billion in Africa. However, projected 2013 production from current assets is likely to be about 150,000 barrels higher per day in Africa than in RCA. The key difference between these two regions is that most of Chinese assets in RCA are already producing and their acquisition costs were therefore much higher.

Characteristics of China's international investment strategy

i) Maximising equity oil supply, backed by the State's resource policy

The Chinese NOCs have to meet ambitious overseas production objectives. CNPC, for example, was producing around 35.82mt (0.72mb/d) from its overseas fields in 2005, of which 20.02mt (0.40mb/d) was its equity oil.¹⁴ It aims to raise its total overseas production to 50mt (1mb/d) by 2010. Roughly half of this production will be destined for China through its production sharing contracts. The companies learned from the experience of JNOC (Japan National Oil Corp, now JOGMEC) when it discovered its focus on exploration projects in unproven fields to be too risky and unprofitable. Chinese NOCs are therefore focusing on acquiring stakes in high-potential exploration blocks, proven reserves or asset holding companies.

The Chinese government's resource diplomacy drive is helping its NOCs to acquire high-potential assets, particular in Africa, where the need for development is most urgent. For example, the Chinese President visited Nigeria in April 2006 to sign an MOU which provided for the right of first refusal on four blocks for CNPC in return for the company's commitment to expand the Kaduna refinery (an investment of about \$2 billion), several infrastructure deals (power and telecoms), and anti-malaria medication and education for medical staff.¹⁵ Similar initiatives helped secure acreage in Sudan, Algeria, Tunisia, Libya, Gabon, Angola, and Saudi Arabia. Chinese oil companies will, if necessary, undertake large-scale infrastructure projects to support their investment and bring in Chinese companies with technology to carry out the projects, as demonstrated in Sudan (see also Chinese NOC competition, p. 18).

¹³ These projections are based on capacity potential reported for individual projects from various sources. The dates are conservative estimates based on a 7 year development phase for deepwater projects. Undoubtedly some of these projects will begin producing before 2013.

¹⁴ CNPC does not produce an annual report, these overseas production numbers come from their website <http://www.cnpc.com.cn/English/gsgk/gsjj.htm>, accessed 27 February 2007 although, it is not clear whether they includes the projects of all subsidiaries. PetroChina's annual report, for instance, discloses a total oil production figure slightly different to CNPC's.

¹⁵ 'CNPC gets right of first refusal on Nigeria oil blocks', *Platts Oilgram News*, April 27, 2006, p. 8, Vol. 84, No. 80.

ii) Rising dependence on Middle East & Africa oil and growing sea-lane supply security concerns

The lion's share of China's crude oil imports come from the Middle East and Africa (77% in 2005; 46% from the Middle East and 31% from Africa) and this is set to continue to grow. Massive shipments are raising sea-lane passage and security concerns. According to the EIA, the scale of global crude oil passing through potential choke points is 38.4mb/d, of which 11.7mb/d goes through the Malacca Straits (and at least 2.2mb/d on to China) and 17mb/d through the Hormuz Straits.¹⁶ Therefore, overland transit options will continue to receive government backing and company finance. This was demonstrated in the investment poured into securing oil and gas pipeline routes from Russia's Far East to China and proposals regarding crude pipelines from Pakistan and Myanmar to China.

iii) Low profile approach: lessons from the failed Unocal deal

CNOOC's failure to acquire Unocal due to strong political opposition in the US was a set back for the Chinese government and its major energy firms in terms of time, money and prestige. Even though CNPC had also experienced failures in the Russian asset buyout – Slavneft in 2002 and Stimul in 2003, the scale was much smaller than that of Unocal. In response, the Chinese authorities are strongly recommending that the big three NOCs take a low profile approach, minimize public disclosure of acquisition details and appear less like political proxies in order to limit negative attention.¹⁷

iv) Towards greater integration, versatility and cooperation

The government encourages the NOCs to cooperate due to concerns that head-to-head competition between Chinese NOCs was driving up the price of upstream assets. The necessity of increasing competitiveness overseas is driving a new more versatile corporate approach in overseas expansion. The traditional business boundaries of the three NOCs are being broken as CNPC and SINOPEC move into the offshore business, while CNOOC is entering the onshore business. For example, SINOPEC is an operator of the deep water exploration of Block 2 in Joint Development Zone (JDZ) between Nigeria and São Tomé e Príncipe. It also has offshore interests in Angola (Block 18 is the biggest of these), Nigeria, Ivory Coast, Gabon, and Congo (Brazzaville). CNPC is an operator of the partly deepwater Block 15 in Sudan together with Sudanese NOC, Sudapet, and PETRONAS and has offshore interests in Nigeria, Mauritania, Libya, and Indonesia. Meanwhile, CNOOC is exploring in onshore in Indonesia and Myanmar. Besides this, both CNPC and SINOPEC and CNOOC are competing for LNG projects, while CNOOC is building refining capacity.

Although the companies have largely maintained geographical separation, it is notable that all three NOCs have significant investments in Nigeria. CNOOC invested \$2.268 billion to secure a deep water offshore block, CNPC is expanding a refinery and SINOPEC is present in the Joint Development Zone and onshore Nigeria.

v) Enabling greater Chinese investment in foreign oil asset holders

The Chinese government is also promoting measures to ensure energy security without necessarily involving the NOCs, for instance through the China Petroleum Investment Fund, which was established to pursue an "Equity for Oil" initiative. The concept is that foreign enterprises holding foreign oil resources or oil field owners may launch equity-bound JVs with oil shares due to Chinese enterprises and a certain amount of cash. Projects will include the building of medium-sized and small oil terminals, oil transport systems, warehouses and refineries and terminal sales points.¹⁸

Potential constraints of China's global expansion

¹⁶ *Oil and Gas Journal*, 9 Oct. 2006, pp. 20-26.

¹⁷ For a more thorough discussion of the implications of Chinese energy policy on China-US relations, see Herberg and Lieberthal: 2006.

¹⁸ The fund was set up by the China International Petroleum Alliance, a multi-partite agreement signed by the China Fund Forum, the International Energy Consulting Co of Beijing Minsheng Commercial Federation, the Economic and Investment Office of the Gulf Arab States and the National Investment Bureau of Saudi Arabia.

i) Rising nationalism

The perception of China as a threatening, energy-hungry power has led to a rise in protectionist attitudes in Russia and the US. Russian authorities gave CNPC's attempt to purchase Russia's Slavneft (in 2002) and Stimul (in 2003) the cold shoulder, and CNOOC's ambition to buy Unocal (in 2005) was also frustrated by the US Congress' determination to block the deal. A breakthrough came in June 2006, when SINOPEC acquired the Russian company, Udmurtneft, in partnership with Rosneft. This was the first major Russian production company acquisition by Chinese NOCs since 1993. This was achieved with the backing of Rosneft, and CNPC established a JV with Rosneft for upstream oil and gas development in Russia's frontier areas.

ii) Negative publicity

China's global oil and gas expansion is receiving significant negative media coverage. In particular, CNPC's pivotal role in Sudan's oil development was heavily criticised for its implicit support of the Sudanese government's hard line stance, including its role in the Darfur crisis.¹⁹ In the US and Europe, some NGOs are critical of China's general investment and lending policies in Africa. In Angola and Nigeria, for example, Chinese state oil firms' massive investments, Chinese government development packages and state bank loans stand appear to sideline the so-called Equator Principles which demand the reduction of lending to projects that could cause environmental degradation and human rights violations.²⁰ For the companies, negative publicity is not a major constraint but their management is fully aware that bad publicity will affect Beijing's evaluation of their performance and will negatively affect their share price.²¹

2. Indian NOCs

At present, Indian national oil companies own equity in upstream projects in at least 20 countries outside India. This section discusses the characteristics, capabilities and constraints of the companies involved in this trend and the defining features of their current investment strategy.

Overview of the Indian national oil companies

There are a number of national oil companies in India in Exploration & Production, Natural Gas and Refining & Marketing sectors, as indicated below.

The Oil and Natural Gas Corporation Ltd. (ONGC) and Oil India Ltd. (OIL, formerly a JV between Government of India and Burmah Oil Company) are the chief E&P companies, producing about 78% and 9% of India's domestic crude oil respectively, the balance coming from private/JV companies. The much smaller Gujarat State Petroleum Corporation (GSPC), promoted by Gujarat State Government, is also engaged in E&P activities.

¹⁹ There are signs that the Chinese government is taking a more pragmatic approach to intervention. President Hu Jintao announced during the November 2006 Chinese-African summit conference last November that he had urged the Sudanese president, Omar Hassan al-Bashir, to work with UN to end the fighting and that China's U.N. ambassador, Wang Guangya, helped secure Sudan's participation in a recent international accord aimed at replacing an African Union peacekeeping force in Darfur with a larger UN contingent. 'China Given Credit for Darfur Role, U.S. Official Cites New Willingness to Wield Influence in Sudan', Edward Cody, *Washington Post*, 13 January 2007.

²⁰ See 'The China Model', Ben Schiller, *Ethical Corporation*, December 2005, pp. 29-31.

²¹ For example, in April 2009, human rights groups in the US objected to CNPC plans to sell \$10bn shares on the New York Stock Exchange arguing that "the deal would be tantamount to US support for genocide in Sudan". The creation of PetroChina, which does not hold interests in Sudan, avoided this charge but there have been doubts as to PetroChina's independence from CNPC which have led several institutions to avoid or divest PetroChina stock. See 'Statement by Harvard Corporation Committee on Shareholder Responsibility (CCSR) Regarding Stock in PetroChina Company Limited', Harvard Gazette, April 2005 and Human Rights Watch (2003).

GAIL India Ltd. is engaged essentially in transportation and marketing of Natural Gas. GAIL also owns and operates two LPG pipelines and is involved in petrochemical production and marketing.

India has three NOC's engaged in refining and marketing, these are Indian Oil Corporation Ltd. (IOCL), Bharat Petroleum Corporation Ltd. (BPCL) and Hindustan Petroleum Corporation Ltd. (HPCL). IBP Co. Ltd., now a subsidiary of IOCL, is engaged in marketing only. Similarly, erstwhile standalone NOC's engaged essentially in refining have become subsidiaries of one of these NOCs. India also has now two private oil companies engaged in refining and marketing, namely Reliance Industries Ltd. and Essar Oil Ltd. They share this sector with Shell India, which has few stations for Mogas/Gasoil.

ONGC and IOCL are by far the largest of India's NOCs in terms of employees (each have over 30,000) but have very different balance sheets. IOCL recorded more than double the revenue of ONGC in FY06 (US\$41bn²² and US\$17bn respectively), but ONGC is India's biggest wealth creator, with over three times the profit of IOCL. Higher revenue in case of IOCL is due to value addition and higher quantum of sales.²³ Profit disparity is essentially due to steep increase in crude oil prices benefiting ONGC on the one hand and under-recoveries in the sale of kerosene/LPG and under realization in gasoline/gasoil sales adversely affecting IOCL on the other.²⁴

Activities in the foreign upstream

ONGC Videsh Limited (ONGC VL), the wholly-owned subsidiary of ONGC, is India's flagship overseas oil and gas investor and the only Indian NOC with stakes in significant producing oil and gas fields (Vietnam, Sudan, Russia, Syria and Colombia). Overseas production was around 92,000 barrels per day of oil, 4.8 million cubic metres of gas per day in 2005-06. ONGC VL (formerly Hydrocarbons India Ltd.) began its activities in the late 1980s and in line with its self-proclaimed 'aggressive approach' has rapidly increased its activities to become a formidable bidder on the international oil and gas scene. As of February 2007, it was involved in 25 projects²⁵ in 16 countries (see Table 2a).

OIL, GAIL India, and the IOCL have established a presence in the foreign upstream in the last few years. HPCL, GSPC and BPCL have joined the international initiative very recently, teaming up with foreign private companies. Reliance Industries, India's largest private sector oil firm, is also going global. At present, it has stakes in 3 oil and gas blocks in Yemen, Oman and East Timor.

In the last three years, Indian NOCs have undergone a sharp learning curve in their investment approaches, as they strive to adapt to Chinese competition. They are also seeking more operatorship of acquisitions abroad. Prior to 2005, Indian NOCs operated projects only in Iran and, until the US-led invasion in 2003, Iraq. Since then, they have assumed sole or joint operatorship in 11 further projects, six of them offshore, two of which are deepwater. Like the Chinese NOCs, they do not yet have the expertise to tackle ultra deep water.

²² This figure was calculated from IOCL's FY06 turnover of 1832044 million rupees using the interbank exchange rate on 31/03/06. Other sources put IOCL revenue at \$36 - 37bn.

²³ Product prices are higher than those of crude oil and also include a substantial amount of taxes i.e. excise duty (on products produced from domestic refineries) and sales tax. IOCL sold nearly 50 million tonnes of products including exports while crude oil production of ONGC was little over 26 million tonnes.

²⁴ 'Under recoveries' relate to sales of kerosene under the Public Distribution System, and Domestic LPG which are being sold at prices set by government which are lower than the procurement prices. 'Under realization' means that national oil company gas stations price their products in line with the informal indications of the government but private-owned gas stations can and do market their products at higher prices, regulated only by customer demand.

²⁵ This does not include a pipeline project that ONGC VL completed with OIL in Sudan.

Table 2a Regional distribution of Indian NOC foreign upstream projects Feb. 2007

| Indian NOC | Africa | Americas | Asia & Australasia | MENA | RCA | Operator | Total no of investments |
|----------------|--|---|---|---|------------|-----------|-------------------------|
| ONGC VL | Nigeria (2) Sudan (3)* Congo (Brazzaville) (1) | Brazil (1) Colombia (1) Cuba (2) Venezuela (1) | <i>Myanmar (2)</i> Vietnam (3) | Egypt (1) Iraq (1) <i>Iran (1)</i> Libya (2) Qatar (1) Syria (2) | Russia (1) | 11* | 25 |
| IOCL | | | | <i>Iran (1)</i> <i>Libya (2)</i> <i>Yemen (1)</i> | | 0 | 3 |
| OIL** | Gabon (1) | | | <i>Iran (1)</i> <i>Libya (2)</i> <i>Yemen (1)</i> | | 3 | 4 |
| GAIL | | | <i>Myanmar (3)</i> | <i>Oman (1)</i> | | 0 | 3 |
| GSPC | | | <i>Australia (1)</i> <i>E. Timor (1)</i> | <i>Yemen (1)</i> | | 1 | 3 |
| HPCL | | | <i>Australia (1)</i> | <i>Oman (1)</i> | | 0 | 2 |
| BPCL | | | <i>Australia (1)</i> <i>E. Timor (1)</i> | <i>Oman (1)</i> | | 0 | 3 |
| Totals | | | | | | 15 | 43 |

Italics indicates a project shared with one or more of the other Indian NOCs

**Including 2 joint operatorships*

*** It is worth noting that OIL and OVL have a joint venture pipeline project in Sudan which is not mentioned here*

Energy sector governance

A level playing field for private companies was created in refining sector in June 1998 with the dismantling of the retention pricing system²⁶ and de-licensing of refining activities. Similarly, with the introduction of New Exploration Licensing Policy, effective January 1999, the E&P sector in India allowed private companies to compete with NOCs on an equal footing.²⁷ However, a non-level playing field remains in the marketing of subsidised kerosene, LPG and transportation fuels. In 1997, public enterprises with competitive advantages were selected to become "global giants". To facilitate this, these companies were granted greater autonomy. Major NOCs were on this list. The NOCs operate in close coordination with the Ministry of Petroleum and Natural Gas as Government, consummate with its interests as the majority shareholder. Like the other countries in this study, NOCs also function as instruments of Government Policy. Further reforms to increase industry competitiveness may be on the cards. The finance ministry reportedly wants ONGC VL to be a stand-alone company, funding the acquisition of assets through its own balance sheet, instead of seeking financial assistance from its parent company.

A relationship of mutual interest links India's NOCs (they work alongside each other at home and ONGC, IOCL and GAIL, who are all listed on the Bombay Stock Exchange, hold shares in one another's stock). At the same time, these companies compete with one another in common business areas. For the long-term, each company appears keen on greater integration in order to improve its profits and increase stability.²⁸ GAIL and IOCL are keen on backwards integration and the upstream

²⁶ This was a complex system, essentially an administered pricing system wherein refineries were allowed to retain pre-determined prices for each of their products by being supplied with crude oil at a specified price. The sum total of the retention prices multiplied by respective quantities of products covered the entire cost plus margins for the refinery.

²⁷ While private entry to the Indian E&P sector was allowed in 1980s, NOCs were being given acreages on a nomination basis until the introduction of NELP.

²⁸ Integration is considered to offer less risk. For example, if the marketing section of a company loses money, the refineries earn good margins that can offset the losses. Adding upstream activities to a business may protect profits further due to very high crude oil prices.

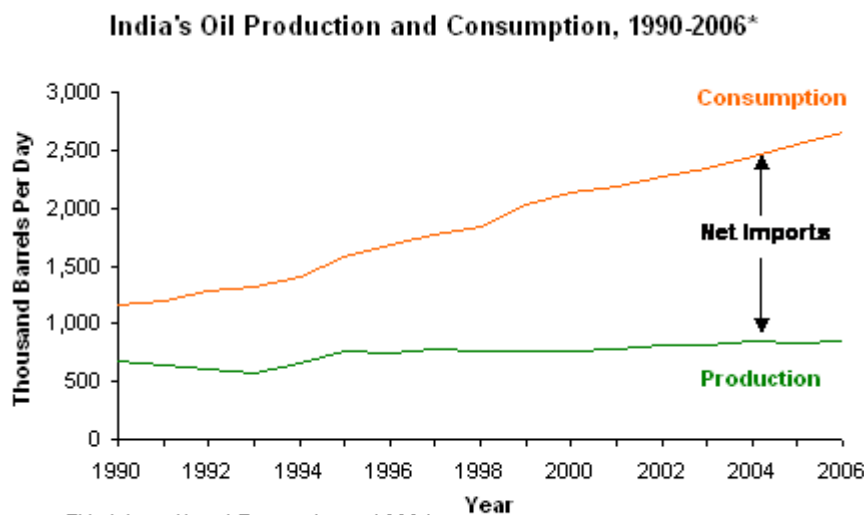
companies are assisting this whilst taking advantage of the downstream and infrastructure skills that such partners can bring to petroleum exporting countries. Proposals to build a mega-company for overseas ventures by merging five of the main state-controlled firms have been shelved due to impracticality.

Drivers and strategies for international investment

The growing demand for energy

India is a net oil importer facing an increasing gap between its domestic production and consumption trends (see Fig. 2b). The Indian government mandates its NOCs to source equity oil overseas to meet this demand. At present, oil and gas account for around 40% of India's commercial energy consumption.²⁹ Imports of crude oil and natural gas (in the form of LNG) account for about 72% and 15% of this consumption respectively. While consumption is only just over one third of China's, India's population is growing faster than China's. According to the influential government-commissioned report, *India's Hydrocarbon Vision — 2025*,³⁰ the country's hydrocarbon requirements will almost triple (from 2.5mb/d in 2005 to about 7.4mb/d) by 2025 while indigenous production of crude is likely to be only 1.6mb/d (Naik: 2001).

Fig. 2b



Source: EIA *International Energy Annual 2004*; *Short-Term Energy Outlook* (Jan. 2007)

*2006 is estimate

Ministry announcements of the physical volumes of overseas equity oil and gas bound for India reveal the political importance of emphasising the contribution of foreign assets to domestic oil supplies. This may explain why the Indian NOCs are not trading their foreign crude or integrating downstream in host countries to the same extent as PETRONAS or the Chinese NOCs. With a long term target of acquiring 60 million tonnes per annum of equity oil and gas overseas by 2025, ONGC VL is currently working towards a goal of 20 million tonnes per annum of equity oil and gas by 2010. For this, its parent company is planning to spend about \$12billion during XIth Plan period - 2007-08 to 2011-12.

Characteristics of Indian NOCs' international investment strategies

i) Chinese NOC competition

Adapting to competition from Chinese NOCs has defined Indian NOC investment abroad over the last few years. Indian NOCs acquired their prime producing reserves abroad either before Chinese

²⁹ We should note that an informal market of combustible fuels such as wood and renewables make up a large part of the picture and these are not included in commercially traded energy consumption figures. Including these brings the oil and gas portion to around 28% of the total according to IEA 2004 figures.

³⁰ The report was presented to the Indian Prime Minister on 27 March 2000.

NOCs became such serious competitors (Vietnam in 1992 and Russia in 1996), or in countries unattractive to the major IOCs - Sudan (we might also include Myanmar and Iran, where discoveries have recently been made). India has found itself at a disadvantage when competing for resources with China for several reasons. Firstly, the Indian NOCs cannot afford to match the Chinese NOC mega-bids such as \$4.18bn for PetroKazakhstan.³¹ ONGC VL has committed around US\$5.16 billion to foreign investments in total since 2000, roughly a half of CNPC's estimated committed investment over the same period. Secondly, India's democratic bureaucracy constrains the NOCs' corporate decision-making capacity³² and thirdly, the government is unable to equal the hefty sweetening state to state loans and aid that China can provide from its excess foreign currency reserves.

These inequalities have led to several wins for the Chinese NOCs against their Indian competitors in the last two years:

- October 2004: 50% of Angolan block 18 was sold to SINOPEC for \$600 million. Although Shell had already agreed to transfer its 50% share to ONGC VL for the price of \$620 million, parallel negotiations by the Chinese government led Sonangol to exercise its pre-emption rights and sign an agreement with SINOPEC.³³
- August 2005: CNPC bought PetroKazakhstan from its Canadian owners for \$4.18 billion, beating competition from ONGC Mittal Energy (OMEL).³⁴ Chinese won the bidding by agreeing to divest 33% of PetroKazakhstan back to the Kazakh government for \$1.4 billion.
- September 2005: CNPC bought Encana assets in Ecuador. CNPC won by bidding \$20 million more than ONGC's \$1.4 billion bid.
- January 2006: CNOOC won the Nigerian block OML 130 (Akpo field) for \$2.268 billion in spite of ONGC VL being the highest bidder. India's cabinet rejected the investment as too risky.

ii) Leveraging diplomatic relations

The Indian government is ready to support its NOCs with diplomatic and economic initiatives. Ministers are capitalizing on links with countries less favourably disposed to the Chinese. The India-Russia relationship is key here. Both countries have maintained an enduring cooperative relationship, forged through military and technical cooperation and bilateral trade. Both governments are now fostering more personal ties to further their common interests in oil and gas. The Russian oil and gas sector is courting Indian NOCs in an effort to diversify its consumer base. While ONGC VL has declined offers to buy a 15% share of the upstream company, Yuganskneftegas, and to bid in Rosneft's IPO, it hopes to use its good relationship with the Russian NOCs to acquire a stake in Sakhalin-3 and fields in Russia's Far East.

The Indian petroleum minister, Murli Deora, held talks with his counterpart, Viktor Khristenko in Moscow in October 2006, saying India would like to set up a joint venture between ONGC and Gazprom to explore for oil and gas in India, Russia and other countries. At the same time, Deora said that Russian firms could take a stake in IOCL's proposed \$4 billion domestic refinery and petrochemical project.³⁵ In February 2007, the chairmen of ONGC and Gazprom discussed cooperation further. Gazprom invited ONGC to participate in eight projects in Russia including oil and gas projects in Eastern Siberia and Russia's Far East.³⁶ Indeed, NOC-NOC exploration

³¹ However, we should note that following CNPC's offer, the Kazakh government persuaded the Indian company, OMEL, not to submit a revised bid.

³² Indian NOCs increasingly want to bid within in the \$400m-\$800 bracket. Currently, ONGC Videsh Ltd (OVL) and the OIL-IOCL combine have a single point approval - the Empowered Committee of Secretaries (ECS) - for overseas investments beyond 3 billion rupees around \$75million. The other NOCs are required to go through an involved and time-consuming process to obtain approval for acquiring E&P assets abroad.

³³ The Indian government offer of \$200m to help build a railway was allegedly dwarfed by \$2bn of investments that the Chinese tabled, *Petroleum Economist*, March 2005. See also 'Angola Courted By New Asian Suitors', *Petroleum Intelligence Weekly*, January 31, 2005.

³⁴ See point iii) below for more details on OMEL.

³⁵ *Energy Watch*, United Press International, 1 November 2006.

³⁶ 'ONGC and Gazprom Agree to Expand Mutual Cooperation', ONGC News, 9 February 2007.

cooperation MOUs and the offer of investment opportunities in the domestic petroleum sector is proving typical of India's business approach to petroleum exporting countries.

India is also rethinking its aid, trade and diplomatic relations with West African states. In 2004, the government launched the Techno-Economic Approach for Africa-India Movement (Team-9) under which it extends 'lines of credit' (LoCs) through the Export-Import Bank of India (Exim Bank) to underdeveloped, resource rich nations including Cote D'Ivoire, Chad and Nigeria for technology and infrastructure projects. Development aid in the form of non-plan grants and loans (including LoCs) from the Ministry of External Affairs to African countries has risen significantly, from an average of \$1.9million a year from FY98-03 to \$24.4million in FY05.³⁷ Although these have not been specifically linked to upstream investment bids, promoting national economic interests abroad is a stated aim of India's overseas development initiative (Price: 2005, p. 4). For example, less than a year after ONGC VL signed an agreement for cooperation in E&P with Ghana's NOC, the Indian government offered the Government of Ghana a \$60m loan, half of which was earmarked for the supply electricity to rural areas, the other, more controversially, for a new presidential palace.³⁸

Much larger LoCs have recently been extended to the Government of Sudan where ONGC VL already has substantial investments.³⁹

In comparison with China, India has superior strengths in IT training, sustainable agriculture and pharmaceutical sectors, which match the needs of many resource-rich states in Africa and Central Asia. It is also perceived as a role model for democratizing countries. These aspects could be leveraged to add significant value to Indian NOC bids in future (Singh: 2007).

iii) Offering integrated packages

Following the Chinese lead, Indian NOCs are beginning to link downstream and infrastructure projects to upstream bids - especially in African countries. Atul Chandra, former managing director of ONGC Videsh Limited, said: "If we can integrate our upstream and downstream industries, we can leverage our buying power. For this reason, in some of the projects abroad, we are working as partners."⁴⁰ In August 2005, ONGC VL and OIL completed a 741km pipeline linking the Khartoum refinery to the port, showing their commitment to the development of Sudan's oil sector. The same year, ONGC VL formed a joint E&P company with steel baron Lakshmi N. Mittal's company, Mittal Steel. The creation of ONGC Mittal Energy Limited (OMEL) suggests that ONGC hopes to cut through bureaucratic processes, learn from the private sector and strengthen bids as an infrastructure provider. The Nigerian government reserved three blocks⁴¹ for OMEL in the 2006 Nigerian mini-bid round in return for investment of some \$6 billion on an export-oriented refinery, a 2,000 MW power plant and railway lines (it is worth noting that 45% of ONGC VL's financing for PetroCanada's assets in the Syrian JV company, Al-Furat, came through OMEL). IOCL and GAIL are hoping to pull off a similar package deal with Nigeria in 2007.

In 2003, ONGC VL and IOCL joined a consortium with BP and Occidental Petroleum Corporation (US) to bid for the development of Kuwait's northern fields - a long-stalled project. In an effort to improve their chances against the other pre-selected consortiums (led by ExxonMobil and Chevron and including SINOPEC), IOCL is flaunting its refining expertise for the Kuwaiti downstream while Kufpec⁴² is offered opportunities in the Indian upstream.

³⁷ Based on Indian Ministry of Finance data in Price: 2005, p. 6 (Table 1).

³⁸ 'Ghana in presidential palace row', *BBC News online*, 15 December 2006, <http://news.bbc.co.uk/1/hi/world/africa/4532672.stm>, accessed 29 November 2006.

³⁹ According to the website of the Investment and Trade Promotion Division of the Indian Ministry of External Affairs, it extended 2 LoCs amounting to US\$391.9 million to Government of Sudan. These were earmarked for financing exports from India to Sudan and for setting up power and transmission projects in Sudan. The LoC Agreements were signed in New Delhi on Monday, January 23 2006.

<http://www.indiainbusiness.nic.in/trade-india/loc.htm>, accessed 29 November 2006.

⁴⁰ Atul Chandra, then Managing Director of ONGC Videsh Limited, quoted in 'The Vietnam connection', *Frontline*, 18-31 January 2003.

⁴¹ Note that OMEL only undertook two of these blocks.

⁴² Kufpec is the foreign upstream subsidiary of the Kuwait Petroleum Corporation (KPC).

iv) Forming a strategic partnership with Chinese NOCs

Chinese-Indian NOC cooperation could be developed to increase bidding power and avoid expensive competition. GAIL took a 9% stake in the China Gas Holding Company in early 2005 and the two companies agreed to set up a 50:50 joint venture to undertake gas projects in China, India and third countries. In August 2005 a MPNG delegation visited Beijing and pioneered arrangements for making joint upstream bids. An MOU between the two neighbours with particular emphasis on energy cooperation followed in early 2006, which both governments earmarked as China-India Friendship Year.⁴³ Following this, CNPC and ONGC won their first joint bid for a stake in Syria's Al-Furat Company and ONGC VL teamed up with SINOPEC to acquire Omimex de Columbia. By the end of the year, a further MOU for future cooperation had been signed, this time between IOCL and SINOPEC.

However, Chinese companies know their superior bidding power and chose not to collaborate with India on the larger deals, in Angola and the Udmurtneft deal in Russia for example. But further smaller scale JVs are likely.

v) Mutual cooperation and asset swaps with IOCs to access reserves in difficult areas

Mutual cooperation with multinationals who already invest in the Indian upstream in order to break into the international upstream or to increase their deepwater portfolio is another tack that Indian NOCs are pursuing. For example, GSPC, HPCL and BPCL have partnered variously with Indian upstream investor, Oilex (Australia) for offshore oil and gas blocks in Australia and East Timor in 2006 and in early 2007, ONGC agreed an asset swap Italian company ENI, with whom it already partners in two Indian blocks, one in deepwater. In return for allocating 34% of an Indian oil block to ENI, ONGC gained its first access to Congo (Brazzaville) with a 20% stake in a deepwater block.

vi) Choosing more expensive, producing ventures, minimizing risk

Most Indian NOC projects abroad are still in the exploration phase but, after unsuccessful exploration in Australia, Libya and Cote d'Ivoire, ONGC VL has begun targeting the more costly but less risky discovered and semi-discovered oilfields. As witnessed, ONGC will also consider buying into companies who already manage large reserves and both IOCL and GAIL have expressed the intention to buy a foreign E&P company. Indian NOCs are trying to minimize losses through competitive disadvantage by seeking acreage where the Chinese NOCs are absent or less active, such as Cuba and Libya, although discovery prospects here are limited. Indian oil companies also look set to finally break into Central Asian/Caspian region where they may be welcomed as a partial counterweight to Chinese influence.

3. Japan's Overseas E&P

Overview of the Japanese companies

In contrast to the other countries in this study, Japan's private sector is taking the leading role in overseas E&P business expansion, with support through liabilities guarantees, equity capital and industry intelligence from the Japan Oil, Gas and Metal National Corporation (JOGMEC) and its predecessor JNOC – both agencies of the Ministry of Economy Trade and Industry. Of the 70 private companies are engaged in commercial exploration and production overseas⁴⁴, the largest are INPEX, JAPEX (Japan Petroleum Exploration Co. Ltd.) and AOC (Arabian Oil Company Ltd.). In April 2006, INPEX Group and AOC generated the largest revenues among Japanese oil companies,

⁴³ This MOU was signed in Beijing by Mani Shankar Aiyar, the visiting Indian petroleum and natural gas minister, and Ma Kai, director of China's National Development and Reform Commission.

⁴⁴ Japan's Petroleum Mining Union, *Japan's Petroleum and Natural Gas Development's Reality and Task*, September 2005, p. 93 (Table 27).

in 2006, with US\$5.99 billion and US\$5.97 billion respectively, more than three and a half times that of the second largest Japanese NOC, JAPEX.

In 2005, 57% of INPEX's net production came from its activities in Asia-Pacific, with large-scale operations in offshore Indonesia. INPEX is also Japan's major supplier of LNG. INPEX Holdings anticipates net sales in 2007 of US\$ 6.68 billion.⁴⁵ The new joint entity, INPEX Holdings, has a combined oil and gas output equivalent to some 372,000 b/d and reserves of around 1.8 bn barrels of oil equivalent. This transformation places it only marginally behind the US company, Apache, in scale.

JAPEX is 49.94% owned by the Ministry of Economy, Trade and Industry and conducts exploration and production activities in the Asia-Pacific region, Russia, Canada, North Africa and the Middle East. JAPEX holds 11.33% of INPEX Holding's shares.

Established as a result of a concession agreement between the Saudi Arabian authorities and the Japan Petroleum Trading Company in the late 1950s, AOC's main exploration and production activity was based in Saudi Arabia and Kuwait, and what is known as the offshore 'Divided Zone' between the two states. By 2003, concession agreements with both states had expired. AOC now provides technical assistance to Kuwait and has a term contract for 100,000 b/d of Kuwaiti crude.

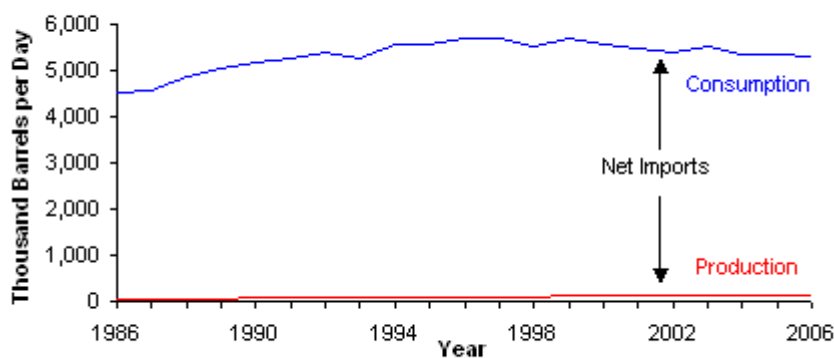
Drivers and strategies for international investment

High dependence on imports

Japan stands apart from the other major Asian consumers as in being a high-importing developed country for which oil consumption is projected to fall as a result of an ambitious energy policy in the coming years (see Fig. 3a). In 2004 Japan relied on imports for 99.7% of its oil consumption and 96.5% of its natural gas consumption.⁴⁶ These imports come largely from the Middle East and Southeast Asian sources (see Fig 3b.), which present supply security concerns.

Fig. 3a

Japan's Oil Production and Consumption, 1986-2006*



Source: EIA, *International Energy Annual 2004*;
Short Term Energy Outlook (November 2006)

*2006 is forecast

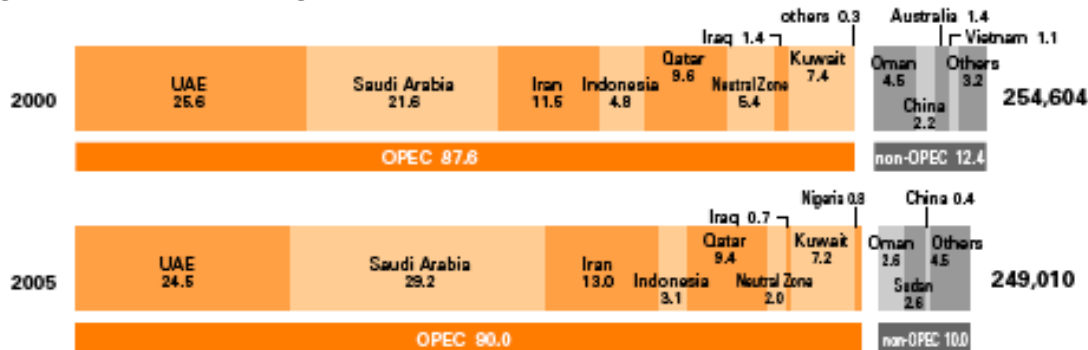
In June 2006, the Energy Committee of METI announced a new National Energy Strategy. The strategy sets forth five specific targets for Japan by 2030. As well as increasing energy efficiency and diversification away from oil, targets include increasing the percentage of equity oil secured by Japanese companies in total crude oil imports to 40% from the present level of 15%. Of these targets, the Institute of Energy Economics, Japan (IEEJ) conceded that the most difficult tasks are the reduction in the ratio of dependence on oil by the transport sector and increasing the percentage of foreign equity oil (Toichi: 2006).

⁴⁵ INPEX Holding Anticipated Forecast 2006.

⁴⁶ JOGMEC Business Report 2005, 'Reliable Partnerships' p.1.

The present level of foreign equity oil is about 0.7 mb/d⁴⁷ which is roughly 17% of Japan's total crude oil import of about 4 mb/d. Since the volume of crude oil imported by Japan is expected to fall to a level of about 3 mb/d by 2030, 40% of the total imported amount will be roughly 1.2 mb/d. The target effectively means that Japanese companies will need to double the current volume of equity oil secured by 2030.

Fig. 3b Japan's oil and gas import patterns 2000 and 2005



Source: Petroleum Association of Japan, Petroleum Industry in Japan 2006, based on data from METI.

Characteristics of Japanese international investment strategies

Japanese oil companies have concentrated their foreign upstream investment efforts on the Middle East and South Asia, where Japanese companies have established relations with each other and ministries. However, Arabian Gulf assets are becoming more difficult to secure and the drive to diversify sources is leading Japan into Latin America, Central Asia and Africa. Although Japanese companies are pursuing 7 projects in Africa, the equity oil from the continent is virtually negligible at present.

i) Set backs and new tracks in the Middle East

The Arabian Oil Co (AOC) was once Japan's stellar upstream performer, but losing its concession to pump 280,000 b/d from the Neutral Zone between Kuwait and Saudi Arabia has been a set back. After AOC's failure to renew the Neutral Zone contract the Japanese government allowed INPEX to commit to invest in the Azadegan Field in Iran as an alternative in early 2004, in spite of US objections. Japanese participation in the field has now been rejected after Inpex's potential partners pulled out and subsequent negotiations over contract terms collapsed.⁴⁸ This was a major loss to Japan's equity oil expansion. However, a group of Japanese energy firms, including INPEX, JAPEX, Mitsubishi, Nippon Oil and Teikoku Oil, managed to win some of the most promising areas on offer during Libya's 2005 licensing round. This was a sign of Japanese firms' determination not to be left behind by the Chinese and Indian NOCs in the race to gain access to the world's most attractive unlicensed oil and gas assets.

ii) Government assistance

To support the new National Energy Strategy, METI has decided to reinforce the supply of "risk money" for oil/gas exploration overseas conducted by Japanese oil companies. Following the examples of India and China, the government has also adopted a policy of strengthening diplomatic relations with resource rich countries and administering Official Development Assistance (ODA) strategically. The JOGMEC provides these exploration loans to Japanese private firms to support their exploration activities abroad and development loans to states come from the Japan Bank for International Cooperation (JBIC, previously Japan Exim Bank).

⁴⁷ This also includes the production of private Japanese companies.

⁴⁸ See *Middle East Economic Survey*, 49:42, 16 October 2006.

4. Malaysia & Petronas

Overview of Petroliam Nasional Berhad (PETRONAS) & PETRONAS Carigali

Established in 1974, the Malaysian state-owned oil and gas company, PETRONAS, has developed into an integrated, international company with business interests in 31 countries. It is involved in activities through the chain, ranging from E&P to gas transmission networks, automotive engineering and even property investment. As at end of October 2005, the PETRONAS Group comprised 104 wholly-owned subsidiaries, 28 partly-owned outfits and 41 associated companies. PETRONAS Carigali (inc. 1978) is its exploration and production subsidiary.

PETRONAS was the first of the NOCs in this study to venture abroad in the upstream. In 2005, PETRONAS held the largest oil and gas reserves outside its domicile country of all singular NOCs.⁴⁹ Overseas operations now make up around one-third of PETRONAS' revenue and account for around 23% of its total reserves. A significant portion of its reserves are located in Africa where PETRONAS has been active since 1997. The company has doubled its reserves there since 2003 and is strengthening its position, with six new ventures in 2006 alone. Main production currently comes from Sudan and Chad (for oil), and Egypt and Iran (for gas) (see Fig. 4a)

PETRONAS identifies itself clearly as a commercial entity. It also sees itself as a hybrid; retaining the best aspects of both a national and an international company.

Fig. 4a

| 12. PRODUCTION | | | | | | | |
|---|------|---------------------------------|-------|---------|-------|-------|---------|
| | Note | FY Ended 31 st March | | | | | |
| | | 2006 | | | 2005 | | |
| | | Oil | Gas | Total | Oil | Gas | Total |
| (in thousands of barrels of oil equivalent per day) | | | | | | | |
| Domestic | | | | | | | |
| Malaysia's production | | 699.1 | 957.0 | 1,656.1 | 735.7 | 955.0 | 1,690.7 |
| PETRONAS' share of Malaysia's production | 16 | 530.0 | 634.2 | 1,164.2 | 559.8 | 653.2 | 1,213.0 |
| As a percentage of total production | | 75.8% | 66.3% | 70.3% | 76.1% | 68.4% | 71.7% |
| International | | | | | | | |
| PETRONAS' international production: | | | | | | | |
| Vietnam | | 14.2 | 1.1 | 15.3 | 11.8 | 1.3 | 13.1 |
| Myanmar | | 4.9 | 28.2 | 33.1 | 3.9 | 22.3 | 26.2 |
| Indonesia | | 13.0 | 9.6 | 22.6 | 9.0 | 7.2 | 16.2 |
| Sudan | | 81.6 | - | 81.6 | 88.4 | - | 88.4 |
| Iran | 17 | 10.1 | 74.4 | 84.5 | 14.5 | 110.0 | 124.5 |
| Chad | | 58.8 | - | 58.8 | 68.0 | - | 68.0 |
| Egypt | | 2.5 | 114.4 | 116.9 | 0.3 | 45.7 | 46.0 |
| JDA | | 1.5 | 17.4 | 18.9 | 0.2 | 2.3 | 2.5 |
| Pakistan | | 0.1 | 2.3 | 2.4 | - | 0.1 | 0.1 |
| Turkmenistan | | 0.2 | - | 0.2 | - | - | - |
| Total international production | | 184.9 | 247.4 | 432.3 | 196.1 | 188.9 | 385.0 |
| Total PETRONAS' production | | 714.9 | 881.6 | 1,598.5 | 755.9 | 842.1 | 1,598.0 |

Source: Petroliam Nasional Berhad: Summary of Consolidated Financials and other Data for Year Ended March 31 2006

Relations with the government

PETRONAS enjoys positive, strong relations with government, and in particular with the Prime Minister to whom it reports directly under the Petroleum Development Act of 1974. A few of the company's directors are drawn from the key ministries and the Vice-Presidents coordinate frequently with senior civil servants at the Economic Planning Unit, the Ministry of International Trade and the Ministry of Domestic Trade and other relevant government bodies. However, it does not appear that the government interferes in the activities of the company or questions its investment decisions.

Thanks to Malaysia's success with economic diversification, the government's reliance on PETRONAS' revenues is smaller than in some other exporting countries – according to Standard &

⁴⁹ *Petroleum Economist*, April 2005, using an unspecified Wood Mackenzie source.

Poor's, 27.5 percent of all expenditures by the Malaysian government come from taxes, royalties and dividends paid by PETRONAS.

The Malaysian government supports the activities of its flagship company abroad. The President sometimes accompanies the Prime Minister on his visits to countries that are of interest to PETRONAS and the government's trade missions may support the company's negotiation efforts.

⁵⁰However, PETRONAS usually negotiates directly with the relevant Ministry and NOC without the support of the government.

It appears that there are occasions where PETRONAS' investments are instrumental in government foreign policy and diplomatic initiatives may outweigh business evaluations. For instance, when Malaysian Premier, Abdullah Ahmad Badawi met with his counterpart, Seyed Mohamed Khatami, in Iran in May 2005, he assured the Iranian President that PETRONAS would not pull out of a joint-venture project to develop a \$2 billion dollar gas field in Iran despite PETRONAS' doubts about the financial viability of the deal.⁵¹

Drivers and strategies for investment

i) Opportunities for Malaysian companies

PETRONAS is expected, as the Malaysian national oil company, to invest domestically. The pattern of this investment has been to widen the scope of activities, for example with a recent strong push into petrochemicals. Part of the company's strategic direction is to make the domestic market more attractive to foreign investors – this has notably been its justification for investing in energy infrastructure.

PETRONAS seeks opportunities for Malaysian companies to provide services supporting the oil sector through its vendor development programmes. Having developed capabilities through such programmes, Malaysian companies are encouraged to venture abroad. For example, Malaysian companies secured a large amount of contracts with the Government of Sudan for the development of Blocks 3 and 7 in the Melut Basin (mainly in engineering, fabrication and construction).⁵²

ii) Pursuing core business opportunities and integrating downstream

Oil and gas are PETRONAS' core business. Investments in other sectors must reinforce this core business. Like its Asian counterparts, it invests in downstream integration to strengthen ties in producing countries. For example, PETRONAS acquired the entire retail assets of Mobil Oil Sudan Ltd in March 2003 shortly before acquiring its fifth (and largest) stake in a Sudanese block. In 2005, it took up a 50% interest in the Port Sudan Refinery Project in partnership with the Sudanese Ministry of Petroleum as it was awarded its first stake in an offshore block. It has bundled upstream with downstream/midstream investments in several other countries, including Chad, Cameroon, Egypt, Indonesia, the Philippines and Vietnam.

Like Statoil, which also has a declining domestic reserve base, PETRONAS focuses on exploring and developing new hydrocarbon reserves internationally. Unlike some Chinese, Indian and Japanese companies operating internationally upstream, PETRONAS does not dedicate the crude it produces (or plans to produce) for the home market. Executives explained in interviews that this would not be perceived as a reasonable strategy: oil can be bought and sold anywhere; it is a fungible commodity. This difference between the Malaysian NOC and its Asian counterparts is also attributable to Malaysia's greater energy independence. Malaysia is likely to remain a net exporter of oil and gas until 2010 (see Fig 4b). The government's two main objectives are to extend the life of domestic energy resources, and to diversify the country's energy mix. Exploration of new oil and gas

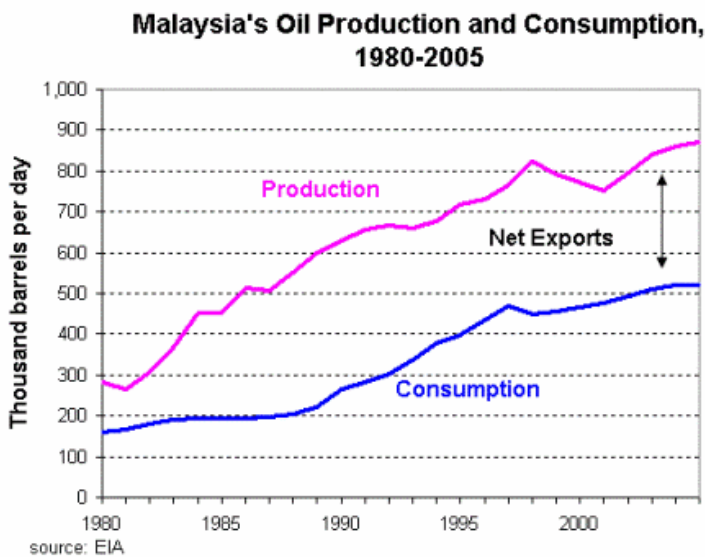
⁵⁰ This has been the case in Sudan, where increased access to military arms reportedly first prompted the government of Sudan to bring PETRONAS into the GNPOC (Patey: 2006).

⁵¹ Petronas will not pull out of Iran project, *Associated Press*, May 13, 2005

⁵² 'Malaysian firms secure \$ 900 mm in Sudan oil jobs', *The Business Times* (in *Alexander's Oil and Gas Connections*), 04 October 2004.

sources abroad features only as a secondary component of Malaysia's long-term energy security effort.⁵³

Fig. 4b



Characteristics of PETRONAS' international investment strategy

i) Profitability

In interviews, company executives explained that PETRONAS seeks profitability and to minimize risks. The company will invest where it can expect decent returns and where it is familiar with the basins. Some executives discussed the risk of particular ventures threatening the company's core values. However, the company's investment portfolio demonstrates a significant level of tolerance for political and reputational risk. It has taken chances in countries where IOCs are hesitant to engage (e.g. Myanmar, Sudan, Turkmenistan, Ethiopia).

ii) Building on relationships

Neighbouring Asian and Muslim states feature prominently in the company's investments so far. Prime Minister Abdullah Ahmed Badawi has also been keen to emphasise cooperation between Asia and Africa.⁵⁴ As a result, in some parts of Africa, the company benefits from the strong relationships which the Malaysian government has nurtured. However, PETRONAS is increasingly looking for opportunities for upstream investment in non-Muslim African countries (Benin Cameroon, Equatorial Guinea, Ethiopia, Gabon and Mozambique). Russia is another new frontier for PETRONAS: in July 2006, it bought \$1.1bn worth of shares in Rosneft when the Russian state company listed on the London Stock Exchange. In Russia, the lack of political baggage between Kuala Lumpur and Moscow seems to have helped the company, while CNPC, who originally bid for \$3bn in Rosneft shares, was allocated only \$500m's worth.

iii) Partnerships

PETRONAS wants to share investment risks and therefore favours partnerships. Its choice of partners demonstrates a preference for major IOCs although it has a decade long experience of

⁵³ See Malaysian Ministry of Energy, Communication and Multimedia (KTAK) website and "Oil Security and Emergency Preparedness in Malaysia" Dato' Syed Hamzah Syed Othman, Deputy Secretary General, KTAK, Malaysia. Presentation given at IEA/ASEAN Oil Security and Emergency Preparedness Workshop, Paris, 1-2 September 2003.

⁵⁴ Mr Badawi proposed five areas of development/political cooperation between Asia and Africa at the Asia Africa Summit in Indonesia in 2005. Though he follows in Mahatmir Mohamad's pursuit of pan-Asian and pan-Islamic trading blocs, his rhetoric is politically less fiery than his predecessor.

working with Chinese companies⁵⁵ and is now increasingly partnering with NOCs from the producing countries in which it is operating for investment in third countries. For instance, in May 2006 PETRONAS and Iran signed a contract for oil exploration cooperation in Uzbekistan (this will be Iran's NOC's first exploration project overseas).

PETRONAS has assumed operatorship or joint-operatorships abroad wherever possible from the outset. The Chinese and Indian NOCs have only recently begun pursuing operatorships abroad. Out of its total 62 ventures, PETRONAS is the operator in 30 of these, joint operator in 13 and active partner in the remaining 23.

iv) Development initiatives

PETRONAS has long been active in promoting community relations through sponsorship of various community programmes focussed mainly on higher education and capacity building. In Africa, however, host country needs have led the company to invest in basic education, local skills transfer and infrastructure building. It is unclear how much PETRONAS engages in these activities in response to specific host country government requests (as contractual obligations surrounding the investment) and how much it initiates as part of its discretionary spending in the country.

5. South Korean NOCS

Overview of the South Korean national oil companies

South Korea has two main national companies exploring for oil and gas abroad, the largest is South Korea National Oil Corporation (KNOC), which was founded in 1979 with the purpose of securing stable supplies of oil. As of February 2006, KNOC was involved in 23 E&P projects in 14 countries⁵⁶, including Vietnam and Libya. In the following year, it gained a foothold in Nigeria (two deepwater blocks), Uzbekistan (Aral Sea), the Gulf of Mexico (for gas) and Canada (oil sands) as well as securing further assets in a gasfield in Kazakhstan and an oil development in Russia's Far East. KNOC is an operator in 9 oilfield blocks. It is roughly comparable in terms of revenue and net profits to Oil India Limited (see Asian NOC comparative charts, p.4 & 5).

The South Korean Gas Corporation (KOGAS) was established in 1983, essentially as an importer of natural gas. KOGAS is a relative newcomer to international scene and the role of upstream business is still non-core. It started to participate in international projects through equity participation in overseas LNG projects, which export LNG to South Korea such as Oman, Qatar and Yemen. KOGAS established the International Projects Group in 2001 to expand its overseas business activities. Subsequently, the company has taken the lead in the PNG development project in Irkutsk, Russia along with CNPC (China) and RUSIA Petroleum (Russia). The PNG project in Irkutsk is a large-scale undertaking to connect pipelines from the Kovyntinkskye gas field in Northern Irkutsk to supply natural gas to China and South Korea. KOGAS is taking part in the South Korean consortium for exploration in west Kamchatka, Russia (signed 2005) and has also secured a foothold in the Southeast Asian gas market by establishing joint investments in two Myanmar gas fields with a total estimated reserve of 5.7-10 trillion cubic feet (along with Daewoo and Indian NOCs, ONGC VL and GAIL).

The financial crisis of 1997 seriously affected South Korea's overseas oil development. The number of new projects decreased from 29 in 1997 to only 8 in 1999, and during the 1998-2002 period, a

⁵⁵ In 1996, PETRONAS signed with CNOOC and Chevron for joint oil and gas exploration in offshore China and went into a large-scale joint venture in Sudan with CNPC (the Greater Nile Petroleum Operating Company). PETRONAS has subsequently partnered CNPC in two further JVs in Sudan, building a "solid partnership" with the Chinese giant. Other developments in the relationship include joining with PetroChina and Pertamina to acquire the entire share capital of Amerada Hess Indonesia Holdings Limited in 2003 and subcontracting the Zhongyuan Petroleum Exploration Bureau (ZPEB), a subsidiary of SINOPEC, to undertake the drilling of Block G's first exploration well in Ethiopia the following year (see also Florence C. Fee: 2006).

⁵⁶ www.knoc.co.kr

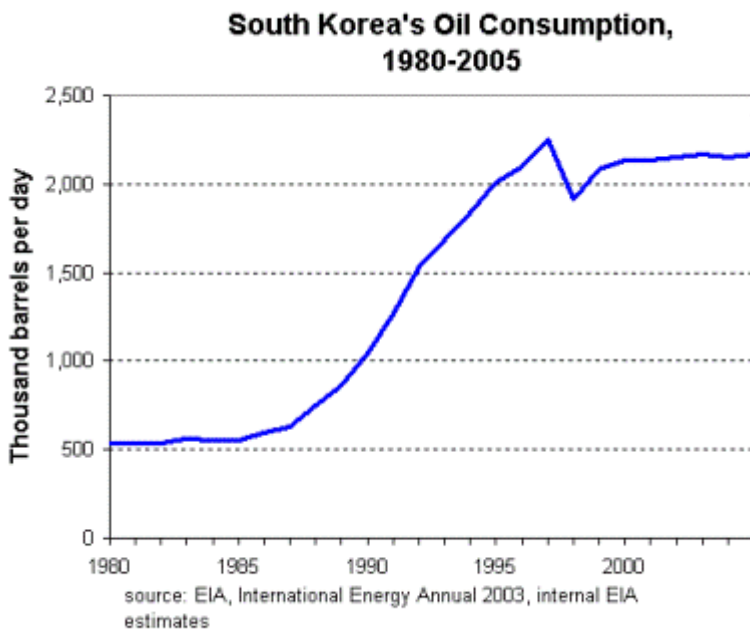
total of 54 projects were abandoned. However, they are making a come back with the support of their government's diplomatic initiatives.

Drivers, strategies and constraints

South Korea is a resource poor country with a high-density population⁵⁷ and an industry-based economy. In 2005, South Korea's energy consumption was around 4.5 million boe/d, over half of which (including all oil imports) was imported. South Korea's oil dependence on Middle East imports hovers around 82%. Strategic oil reserves are important to the country's energy security strategy. As of July 2006, these reserves reached 167 million barrels (125.5 days). The high oil price delivered an additional wake-up call to South Korea's energy planners.

During South Korea's 2004 State Energy Conference, it was decided that South Korean companies would produce oil equivalent accounting for 10% of national oil imports by 2008 and 18% by 2013 from overseas oil fields (Suh: 2006). This will require a significant increase from the 2005 South Korean company equity share of 4.1% (41.1 mb/y out of the total imports of 1,033mb/y) in 2005. According to State Energy Basic Plan 2030, prepared by the Korea Energy Economics Institute (KEEI), the equity oil ratio should be 35% of South Korea's total oil imports and South Korea's oil dependence should be reduced to below 35% by 2030.⁵⁸ To meet these demands, KNOC plans an ambitious global E&P expansion drive. By 2015, the company aims to register a US\$5 billion turnover, make US\$2 billion in operations profit (over 7 times its current 2005-2006 net profit) and secure 2 bn barrels of proven reserves (from the equity oil initiative) through a total investment of US\$14 billion.

Fig 5a



In spite of KNOC's ambitious objectives, the actual funding for overseas business development is limited. In fact, KNOC's budget, which is supervised by the Korean Ministry of Commerce, Industry and Energy (MOCIE), is heavily affected by the Ministry of Finance spending guidelines, and it is effectively a constant battle for KNOC to secure a bigger budget for overseas investment. A recent trend is to use private equity funds for the E&P business, but it will take time to secure adequate funding for the expansion this way. To address this challenge, a member of parliament proposed

⁵⁷ The population density in South Korea is around 480/km² according to UN statistics for 2005.

⁵⁸ Reported in *e2news* (an Energy Daily in Korean), 5 August 2006.

during recent parliament hearings that KNOC, with assets of US\$ 7.5 billion, and Kogas, with assets of US\$ 11 billion, should merge into one major energy firm.⁵⁹ Privatization is another attractive solution. KEEI, the energy think tank of MOCIE, recently advised KNOC that it should establish an upstream specialist company by 2009, when the firm's oil and gas production capacity reaches 150,000- 200,000 b/d and this firm should be privatised by 2013.

Characteristics of South Korea's overseas oil development

South Korea's overseas oil development strategy can be characterised as follows:

- To encourage joint ventures between South Korean oil and gas companies and related industry to link energy infrastructure (electricity networks and power plants) projects with oil development. For example, In March 2006, the Nigerian government agreed to allocate stakes in two oil blocks (OPL 321 and 323) with 2bn barrels of reserves to KNOC in return for promises by a South Korean consortium to undertake large scale infrastructure projects, thereby overstepping the Indian NOC, ONGC VL, to snap up the majority share. Late last year, the consortium, which included POSCO Engineering and Construction, KNOC, Korea Electric Power Corp (Kepeco) and Daewoo Shipping and Marine Engineering was in talks with Nigeria over a US\$10 billion project to modernize the 1500km railway from Port Harcourt to Maiduguri in the east and build a 2,200 megawatt gas plant in Abuja.⁶⁰ A similar package deal is being discussed between Libyan and South Korean government.
- To strengthen energy diplomacy, focusing in particular on Central Asia, Russia and Africa;
- To increase financial support for overseas oil development, for example, in November 2006, a fund was launched to attract private investment for acquiring overseas oil assets. KNOC will manage this fund but it will be financed by South Korean private companies and individuals (not government) with tax incentives provided.
- To foster an oil development company and develop human resources;
- To develop non-conventional oil & new technologies, e.g. for oil sands and gas to liquids (GTL);
- To encourage cooperation between national energy corporations and private companies to develop overseas energy resources (South Korea Overseas Energy Development Promotion Association was established in February 2006).

The following table, produced by KNOC, gives a rough idea of the way the company views its development overseas.

Table 5b Development of KNOC's overseas investment approaches

| | Past | Current |
|---------------------------|--------------------------------|---|
| Participation form | Equity participation preferred | Secure mainly operatorship |
| Main Participant | Private company led | KNOC working with private E&P companies |
| Size of Project | Small scale | Large scale |
| Other remarks | | Strengthen strategic energy diplomacy |

Source: KNOC (2006).

⁵⁹ The Gas Industry News (Korea), 1 November, 2006.

⁶⁰ Reported in the *Financial Times*, 2 November 2006. See also 'POSCO E&C Pursues Railroad Construction Project in Africa worth 10 Billion Dollars', POSCO news, (http://www.poscoenc.com/english/addmenu/news/news_view.asp?hNO=225)

Annex

Methodology for Chinese data collection

Data collection started on the official web sites of Chinese companies. Each project listed on the NOCs' web site has been entered into an excel spreadsheet and extensively researched using industry journals, news wires and magazines.

- The research does not include LNG deals, unless they have been used to secure upstream acreage.
- Definition of *project* includes upstream, downstream and transportation deals.
- During the research the focus has been more on the projects dated after 2000, however some significant projects from the 1990s have also been entered.
- All the financial data and estimated production capacities used in the following calculations are from the moment of contract signing and do not adjust for increases or decreases in spending or production afterwards.

Table 1e Chinese NOC investment flows

| Total Chinese NOC investment flows by years (millions of USD) | | | | | | |
|---|-----------------|----------------|----------------|-----------------|----------------|----------------|
| | Total | Africa | MENA | RCA | Asia | S & N America |
| 1993-1995 | \$160 | \$0 | \$0 | \$0 | \$160 | \$0 |
| 1996-1998 | \$5,171 | \$441 | \$0 | \$4,371 | \$0 | \$359 |
| 1999-2000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2001-2002 | \$1,869 | \$0 | \$444 | \$81 | \$1,329 | \$15 |
| 2003-2004 | \$3,506 | \$1,144 | \$444 | \$1,497 | \$221 | \$200 |
| 2005-2006 | \$16,472 | \$6,404 | \$371 | \$7,430 | \$93 | \$2,175 |
| TOTAL | \$27,178 | \$7,989 | \$1,259 | \$13,379 | \$1,803 | \$2,749 |

Source: Chatham House research (2006)

Table 1f Geographic distribution of Chinese NOC investments

| Chinese NOC investments (1993-2006) | | | | | | |
|-------------------------------------|---------------------|-----------|-----------|-----------|-----------|---------------|
| NOC | Total # of projects | Africa | MENA | RCA | Asia | S & N America |
| CNPC | 74 | 17 | 14 | 20 | 10 | 13 |
| SINOPEC | 29 | 14 | 6 | 6 | 1 | 2 |
| CNOOC | 13 | 4 | 2 | 0 | 6 | 1 |
| Sinochem | 4 | 0 | 3 | 0 | 0 | 1 |
| TOTAL | 120 | 35 | 25 | 26 | 17 | 17 |

Source: Chatham House research (2006)

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Energy Information Administration, www.eia.doe.gov

GAIL (India), www.GAILonline.com

Indian Oil Corporation Limited, www.iocl.com

Inpex Corp., www.inpex.co.jp

Investment and Trade Promotion Division of the Ministry of External Affairs, India, <http://www.indiainbusiness.nic.in/>

KNOC, www.knoc.co.kr

KOGAS, www.kogas.or.kr

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Oil India Limited, oilindia.nic.in

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ONGC Videsh, www.ongcvidesh.com

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