

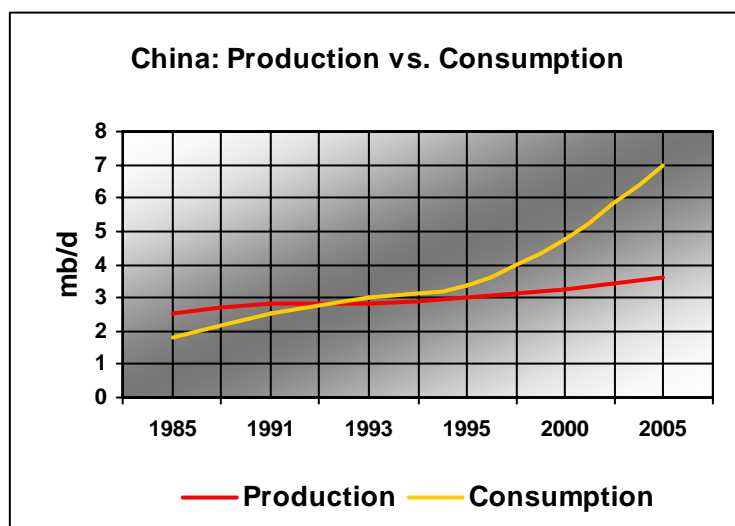
This paper examines the risks arising from acquisition of overseas oil and gas assets by Chinese oil companies. The analysis covers risks to financial health of the Chinese oil companies as well as risks facing the Chinese economy as a result of activities of Chinese oil & gas companies.

Section 1 provides oil demand and supply balance for China, imperatives for energy security and overseas activities of Chinese oil companies. **Section 2** covers risks arising from overseas investments. **Section 3** covers risks arising from competition with other oil importing countries. **Section 4** covers an India perspective.

Section 1

China's oil demand-supply balance and imports

China is the world's second largest consumer of oil in the world after the United States, consuming around 7 million barrels of oil per day (mb/d). Since the start of economic reforms in 1978, its economy has grown at an average rate of 9-10%, fuelled by increasing foreign investment, exports and industrialisation. Correspondingly, oil consumption quadrupled in the same period, rising from 1.6 mb/d in 1980 to 7 mb/d in 2005. China accounted for 33% of global incremental oil demand between 2000 and 2005.



China was a net exporter of oil till the early 1990s. Although China is the sixth largest producer of oil in the world, production at 3.62 mb/d is sufficient to meet only half of its current demand. The gap between demand and supply widened from 0.2 mb/d in 1993 to more than 3mb/d in 2005.

China's proven oil reserves at the end of 2005 stood at 16 billion barrels with a reserves-to-production (R/P) ratio of 12 years. The Energy Information Administration (EIA) projects that by 2020, China's oil demand will increase to 11.7 mb/d. Its oil production, however, is projected to increase nominally to 3.8 mb/d. These estimates indicate China's import dependency may increase to about 70% in the next 15 years.

This rising import dependency has raised intense concerns about energy security in the country. According to a study produced by the Policy Research Division of the Communist Party, “The shortage of oil is the most important challenge for China’s energy security in the foreseeable future. The question of importing oil is not a pure economic issue, but more an issue involving international politics.” China has pursued a number of measures to ensure its oil security. These include, inter-alia, diversification of supply sources and oil import routes, strategic reserves, encouraging oil companies to adopt the “going-out” strategy, and energy diplomacy to help China’s national oil companies (NOCs) secure trade and investment deals.

The rationale for owning resources abroad gains further legitimacy from increasingly voiced concerns about supply. A number of oil basins in the world are maturing and the OPEC will be called on to meet a larger share of demand. Some analysts have expressed doubts whether OPEC will be able to do so. Aside from geological reasons, production growth from OPEC areas may not be smooth due to political and economic realities. Declining production could trigger competition for scarce oil, and ownership of resources is considered to be an insurance against a situation where China is unable to buy oil despite the capacity to pay for it.

China’s NOCs and foreign oil investments

China’s oil and gas industry operations are dominated by three companies – China National Petroleum Corporation (CNPC), China National Petrochemical Corporation (Sinopec) and China National Offshore Oil Corporation (CNOOC). CNPC and Sinopec were conceived as upstream and downstream companies respectively. Following restructuring in 1998, both companies were converted into vertically integrated oil companies through assets swaps. Rough geographical monopolies were maintained, with CNPC’s assets being located primarily in China’s north-eastern, northern and western regions, and Sinopec’s assets located primarily in the south-eastern and southern regions. CNOOC’s responsibilities mainly included offshore oil and gas exploration, development and production operations. All the three companies are owned by the State.

All the three NOCs have operations overseas ranging from exploration and production, services, pipeline operations, downstream, etc. There are three distinct phases to overseas expansion by NOCs: 1992-1997, 1997-2002, 2002- current.

Initial investments in overseas assets were largely undertaken by CNPC and were focussed on small projects involving field development, rehabilitation and purchase of shares in targeted blocks in Canada, Peru, Thailand, and Papua New Guinea. CNOOC also undertook its first overseas investment in 1993 by purchasing rights in an Indonesian block.

Beginning 1997, Chinese NOCs upped their investments in overseas assets, especially in oil-rich countries like Kazakhstan, Venezuela, Sudan, Nigeria, Kuwait, Egypt and Iraq. CNPC's investments in Kazakhstan and Sudan were the two most strategic investments between 1997 and 2002. Investments in Kazakhstan have provided an overland route for transportation of oil and gas directly to China. Sudan's proven oil reserves amount to 700 million barrels in the Muglad and Melut basins, in the south-south-western part of the country. The "Sudd" region in southern Sudan is virtually unexplored and is believed to hold 5 billion barrels or so in recoverable reserves. Muglad and Melut sedimentary basins were discovered by Chevron in the 1970/80s following years of exploration and more than a billion dollars of investment. However, the deteriorating security situation due to the civil war in the country forced Chevron to withdraw from the southern region. Unable to operate its concessions, Chevron sold off its assets in the early 1990s. Further, the US imposed economic sanctions on Sudan in 1997 in response to Sudan's *"support for international terrorism, ongoing efforts to destabilize neighbouring governments, and the prevalence of human rights violations, including slavery and the denial of religious freedom."* All trade and investments by American firms in Sudan were prohibited. Decks were thus cleared for entry by Chinese oil companies. CNPC acquired 40% stake in the Greater Nile Petroleum Operating Company (GNPOC) consortium in 1997. The project started production in 2000 with an output of 33,000 b/d. In 2005, production reached 500,000 b/d and may attain 750,000 b/d levels in 2007. In 2003, CNPC signed an agreement with Sudan to explore Block 3 & 7 (Melut Basin). It holds 41% equity and operator ship through Petrodar Operating Company. Initial production from the block was 5000 b/d, however, three new oilfield discoveries in 2004/05 are expected to increase yield to 100,000 b/d. CNPC also holds 95% equity in Block 6 (Meglud Basin). Current production from the block is 10,000 b/d and is expected to reach 170,000 b/d.

Investments between 1999 and 2001 were limited, probably due to low oil prices. The third phase of overseas investment started from 2002 and has been characterised by increasing overseas forays by CNOOC and Sinopec as well. Secondly, the Chinese NOCs expanded their deals to include natural gas, LNG, unconventional oil such as Canadian oil sands and deep-water offshore projects. This phase has been marked by greater boldness in the acquisition strategy of the NOCs as exhibited by CNOOC's unsolicited all cash bid of \$18.5 billion for Unocal in 2005. The attempted takeover ultimately failed due to the political backlash from the US Congress.

Details of overseas investment by Chinese NOCs are provided in Annexure 1.

Chinese NOCs have invested about \$7 billion in overseas oil and gas assets in fifteen years between the early 1990s and early 2005. China's NOCs produced about 450,000 b/d of equity oil abroad in 2005, constituting 15% of total imports and 6% of China's current oil consumption. Most of the production comes from a few countries and is largely owned by CNPC. CNPC share in foreign equity oil production in 2004 was around 89%. In the same year, Sudan, Kazakhstan and Indonesia accounted for 79% of the overseas equity oil production of 372,370 b/d by China's NOCs.

Angola and Nigeria are the new areas of investments for China's NOCs and would provide substantial sources of foreign equity production in future. China National Petrochemical Corporation (Sinopec) bought into a BP-operated offshore block in 2004 and has tied up with Angola's Sonangol to run another block, previously run by Total.

The Chinese government has been cultivating close diplomatic ties with oil producing nations to smoothen the investment climate for Chinese NOCs. These ties have been buttressed by extremely attractive financial packages that are devoid of "moral overtones" generally accompanying western loan and aid packages. Chinese analysts therefore have added energy diplomacy (*nengyuan waijiao*) as a third pillar of Chinese foreign policy in the Hu era. The other two being great power diplomacy (*daguo waijiao*) – pursuing good relations with its key global economic partners, including the United States and EU – and good neighbor diplomacy (*zhoubian waijiao*) – developing cordial relations with its neighbors.

In 1997, when CNPC acquired a 60 percent share in Kazakhstan's Aktobemunaigaz Production Association, it agreed to guarantee the pensions and housing of some 5000 employees, service Aktobemunaigaz's debts of \$71 million, invest \$10 million in environmental protection measures, and pay royalties to the government of Kazakhstan. CNPC succeeded over the bids of Texaco, Amoco, and Russia's Yujnimos by offering to pay up-front a \$320 million bonus to the cash-strapped Kazakh government and to conduct a feasibility study on the construction of an 1800-mile pipeline from the Aktyubinsk fields to western China, estimated to cost \$3.5 billion, providing a export route not dependent on the Russian pipeline system.

In 2004, China's Eximbank approved a \$2 billion soft loan to Angola to repair its war-ravaged infrastructure at extremely generous terms – 1.5% interest over 17 years. It is universally acknowledged that this offer trumped Royal Dutch/Shell's plan to sell its stake in Block 18 to ONGC Videsh and the stake was finally awarded to Sinopec.

In 2005, Chinese Vice Premier Zeng Peiyan visited Angola and extended a \$6.3 million interest free loan. China also pledged to invest \$400 million in Angola's telecommunications sector, and \$100 million to upgrade the Angolan military's communication network.

In Nigeria, China secured preferential bidding rights for four oil-drilling licenses in exchange for \$4bn investments in refineries, power and other infrastructure.

Beijing established the China-Africa Cooperation Forum in 2000 to foster economic and political ties with Africa. The Chinese Government has also set up a special fund for State Owned Enterprises and preferential loans for other Chinese enterprises operating in Africa. A World Bank official estimated that announcements made this year alone – dubbed China's "Year of Africa" – amounted to commitments of \$10bn in African infrastructure. That would, he

pointed out, outstrip the flow of traditional international aid or private sector investment in infrastructure projects.

China has used its Security Council membership to successfully protect its investments in Sudan. China has consistently maintained that conflict in the Darfur region of Sudan is its internal affair and resists any external interference in it. In September 2004, China threatened to use its veto power in case of any attempt to impose an oil embargo against Sudan. It also abstained on the vote to refer Darfur suspects to the International Criminal Court. China has also provided military assistance and equipment to Sudan where other suppliers are barred by embargoes. China has reportedly stationed 4000 non-uniformed forces in Sudan to protect its oil interests.

China has been developing close ties with oil-rich Venezuela and Iran, to the great annoyance of the United States.

Apart from financial assistance to oil producing nations, China provides its NOCs cheap capital through China Development Bank and China Export Import Bank to aid their acquisition strategy. According to a China Exim Bank official, the interest rate provided through 2000 to companies investing abroad was 2% points below that offered by commercial banks. In 2004, the National Development Reform Commission and China Eximbank announced that the bank will provide credit on preferential terms to Chinese companies for “state-encouraged key overseas investment projects,” including natural resources development. China Eximbank has provided lines of credit of up to \$1.2 billion to both CNPC and Petrochina. For its \$18.5 billion bid for Unocal, CNOOC arranged a \$4.5 billion subordinated loan at the below-market rate of 3.5% (duration of the loan being 30 years) and a \$2.5 billion subordinated two-year bridge loan at zero-interest rate from its state-owned parent company.

China’s policy makers maintain that Chinese NOCs are relative new comers in the global oil scene and need state support to overcome this disadvantage. Secondly, state assistance is provided by most countries to benefit their oil companies.

Risks

Risks from overseas activities of China’s NOCs can be classified in two categories –

1. risks faced by NOCs flowing from their investment decisions
2. risks to China due to oil acquisition strategies of NOCs.

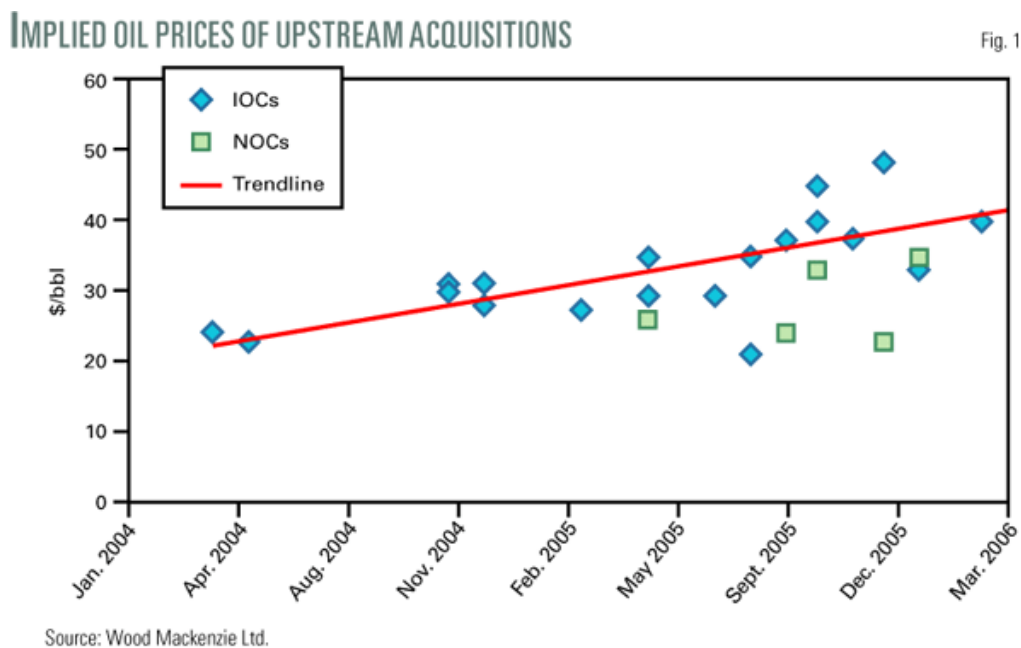
Section 2

Risks faced by NOCs flowing from their investment decisions

The two main risks in this category are – commodity risk, and risks arising from the political environment in the host country.

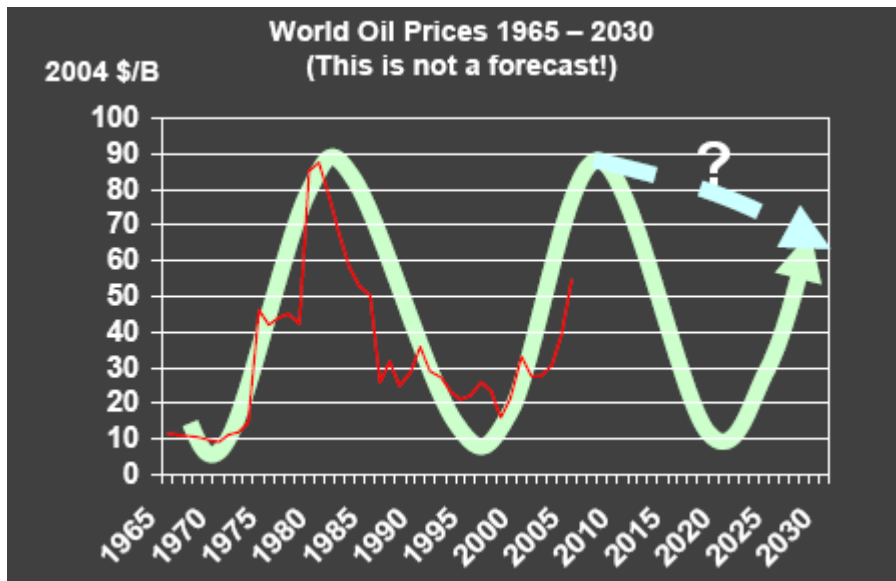
Commodity risk

It is contended that China’s NOCs often subordinate the financial aspect of their acquisitions to overall strategic interest in gaining access to oil resources and end up overpaying. However, a report by the consultancy, Wood Mackenzie, disputes this view. It says that acquisitions by Asian oil companies often yield slightly higher rates of return than those by Western companies. Asia’s latest deals assume long-term oil prices in the range of \$23 to \$35 a barrel. By contrast, Western oil companies have made deals that assume oil prices of \$40 a barrel or more.



Some analysts dispute the study’s findings. They argue that Western and Asian acquisitions cannot always be compared because Asian acquisitions sometimes involve government subsidies. Critics also argue that China is paying too much for oil in politically risky places, even if it isn’t necessarily bidding more than western oil companies. The right to develop oil in places like Sudan, Nigeria, etc., should trade at a discount to the right to develop Canadian oil fields.

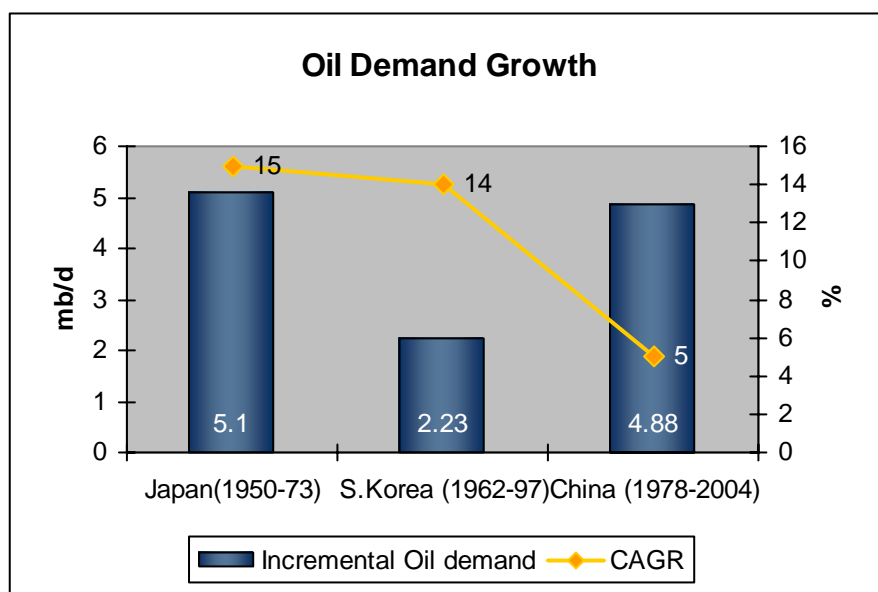
Oil, like any other commodity, has been subject to boom and bust cycles. The fluctuations in prices are a result of lag in response of producers to price change. Supply of oil today depends on prices in the past while demand depends on current prices. The longer the time lag between demand and supply response to prices, the greater is the volatility. The question then arises – are current oil prices an aberration that will revert to mean or is there a structural change with price moving to a permanent higher level.



Source: Terra Incognita – A Navigation Aid for Energy Leaders, Chris Ross, CRA International

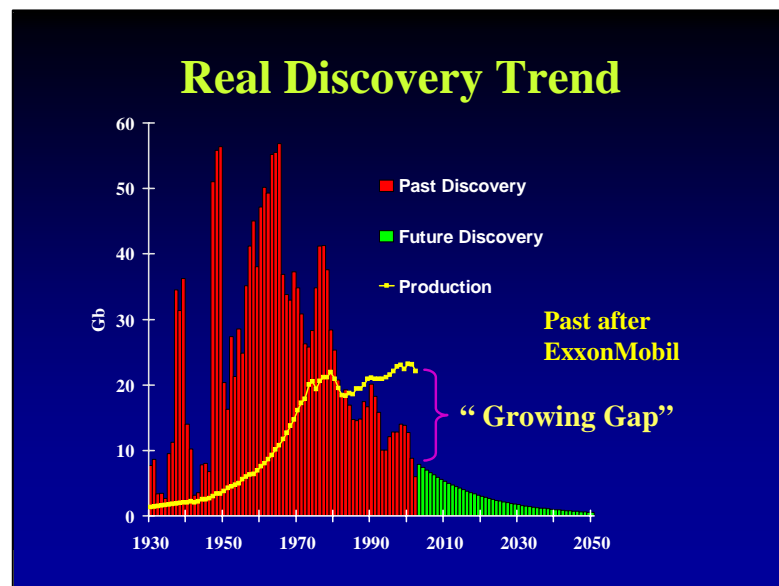
In the long-term, oil prices will depend on the demand-supply balance. Currently, less than one billion people comprising developed OECD countries consume 60% of the oil produced. OECD countries consume about 16 barrels per person per year compared to 4.6 barrels per person per year for developing countries. As a country embarks on manufacturing led growth, oil consumption also increases. This was demonstrated when the Japanese economy grew phenomenally between 1950 and 1973 and by the South Korean economic growth between 1962 and 1997.

As developing countries like China, India, Brazil, etc., move along the developmental scale, their oil demand will increase. For example, were China and India's annual per capita oil consumption to reach 3 barrels from the current levels of around 2 barrels for China and less than one barrel for India, it would add around 11 mb/d to oil demand. EIA expects oil demand to rise to 104 mb/d in 2020 from the current level of around 82 mb/d, an increase of 22 mb/d.



On the supply side, however, there is considerable uncertainty. Current global oil production is around 81 mb/d, with a 40:60 split between OPEC and non-OPEC areas. There are two competing arguments. On one side are analysts who believe that global oil production may peak by the end of this decade or at best by the early part of the next decade. In support of their argument they point out that the annual average discoveries have been declining since the 1960s and the industry has not replaced production with new discoveries since 1980. Discoveries in the last 10 years have averaged about 10 Gb/year while production and consumption have averaged 23 Gb/year.

The following graph, with historical information from ExxonMobil, illustrates that the world is currently producing and consuming about 3 barrels for every 1 discovered. It is this continued shortfall that has eroded OPEC's spare production capacity, which in the mid-1980's reached a staggering 15 MM bbls / day, and is now less than 2 and perhaps less than 1 million barrels per day.



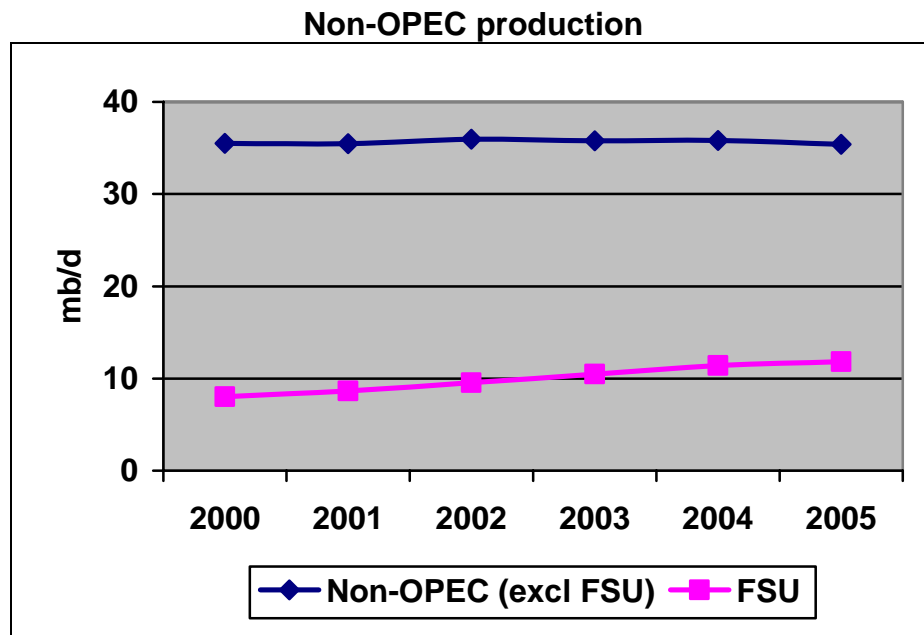
As per ExxonMobil, the average production decline rate for the global oil fields is between 4 and 6% per year. It means that today's production of 84 mb/d would decline to 45 MM/d over the next 15 years. This, in turn, implies that new production would need to grow by 39 mb/d for the next fifteen years just to offset the decline in production. Thus, new production of 50-67 mb/d would be needed to meet the projected demand of 95-112 mb/d of oil in 2020.

The second group of analysts are more optimistic about the oil supply situation. They point out that on the basis of 3 trillion barrels of ultimately recoverable conventional crude oil, the 50% stage of recovery shall be passed in 2022. If Canadian tar sands and the Venezuelan heavy oils are counted as 'oil', the picture is even more comfortable. This group is more optimistic about the impact of high prices and technological advances in stimulating new discoveries and in recovering more oil from existing fields.

In fact, CERA's analysis indicates that incremental supply may outstrip demand by the end of this decade. There is also a possibility of a slow-down in the US economy following the collapse of the housing market and its impact on externally dependent economies in Asia – China, Japan, Korea and Taiwan, etc. Exports account for more than 35% of China's GDP and the US is its largest export market with a 21% share. In 1998/99, the Asian financial crisis brought oil prices to a new low by removing a major source of incremental demand from the oil market. The Asia-Pacific region was responsible for almost 90% increase in oil demand between 1990 and 1997. In recent years, China and the US have been the major engines of growth in oil demand, accounting for almost 50% of incremental demand in last five years. Any slowdown in their economies will impact oil prices via a slowdown in oil demand.

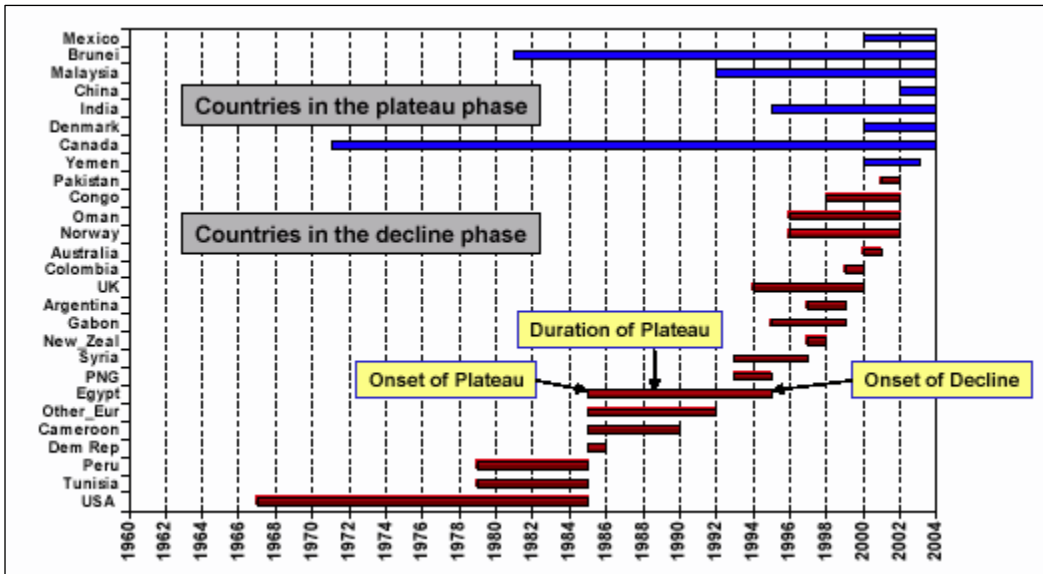
However, most analysts do indicate that non-OPEC production will face serious growth challenges beyond 2010 and the world will increasingly depend on OPEC for oil supplies.

In the recent past, non-OPEC production – with the exception of FSU – has been stagnant despite high oil prices.



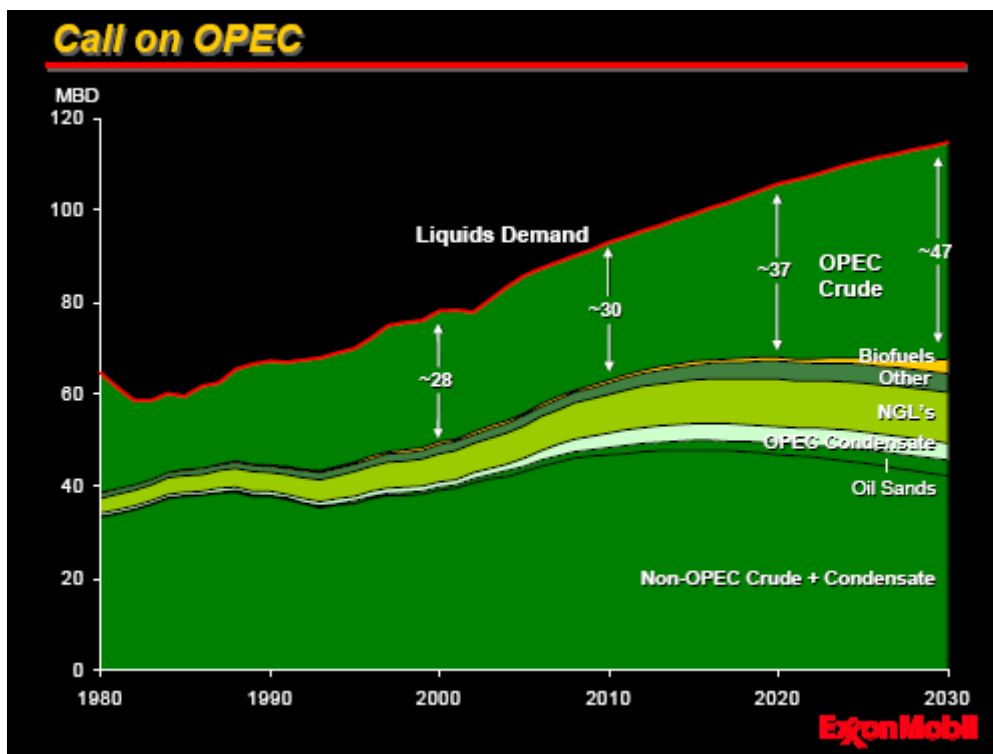
Source: BP statistical review of world Energy

The following graph by PFC Energy shows Non-OPEC Countries that are either in decline or currently in a plateau.



Non- OPEC Countries that are either in decline or currently in a plateau

An upstream assessment by the PFC Energy in 2004 concluded: “If non-OPEC peak oil early in the next decade is a real possibility, clearly OPEC will have a more dominant role in world crude oil markets – if some of the more conservative views of OPEC reserves is the reality, then, it is difficult to model a world where oil production exceeds 100 million barrels a day”.



Current oil production capacity of OPEC countries is around 31-31.5 mb/d.

Two conclusions flow from the above analysis. First, demand is bound to increase with industrialisation, urbanisation and motorisation of developing countries. Second, the world will become increasingly dependent on OPEC and, especially, Gulf countries with 62 per cent of the world's proven reserves.

OPEC's incremental capacity and its cost : 2004 - 2020

	Capacity	Incremental		Incremental	Investment in	Cost per
	2004 mbpd	2004-10 mbpd	2010-20 mbpd	2004-20 mbpd	Incremental cap. \$ bn	peak daily bbi US \$
Saudi Arabia	11.0	1.0	2.0	3.0	11	3,500
Iraq	2.3	1.4	1.5	2.9	13	4,500
Iran	4.1	0.6	1.3	1.9	12	6,000
Kuwait	2.4	0.4	1.2	1.6	7	4,500
U.A.E.	2.6	0.6	1.4	2.0	11	5,500
Qatar	0.9	0.2	-0.2	0.0	1	5,500
Libya	1.6	0.4	1.3	1.7	10	6,000
Algeria	1.3	0.5	-0.5	0.0	3	6,000
Nigeria	2.6	1.1	0.6	1.7	14	8,000
Venezuela	2.6	0.7	0.9	1.6	14	9,000
Indonesia	1.0	0.0	-0.4	-0.4	0	6,500
OPEC capacity	32.3	6.9	9.2	16.1	96	5,570
Call on OPEC	29.0	1.2	13.7	14.9		weighted

The OPEC members' planned increases in capacity to 2010 are far in excess of what is required. In the period 2010-20, however, the planned rises are well short of incremental oil demand. The crucial questions are as follows: will Iran be able to invest \$12bn, or Nigeria find around \$7bn for its share of the development cost, or Venezuela invest \$14bn? Note that expenditure on capacity maintenance is not included.



Source: We have plenty of oil — we just need to invest more, Dr. Leonidas P. Drollas, Deputy Director and Chief Economist, CGES

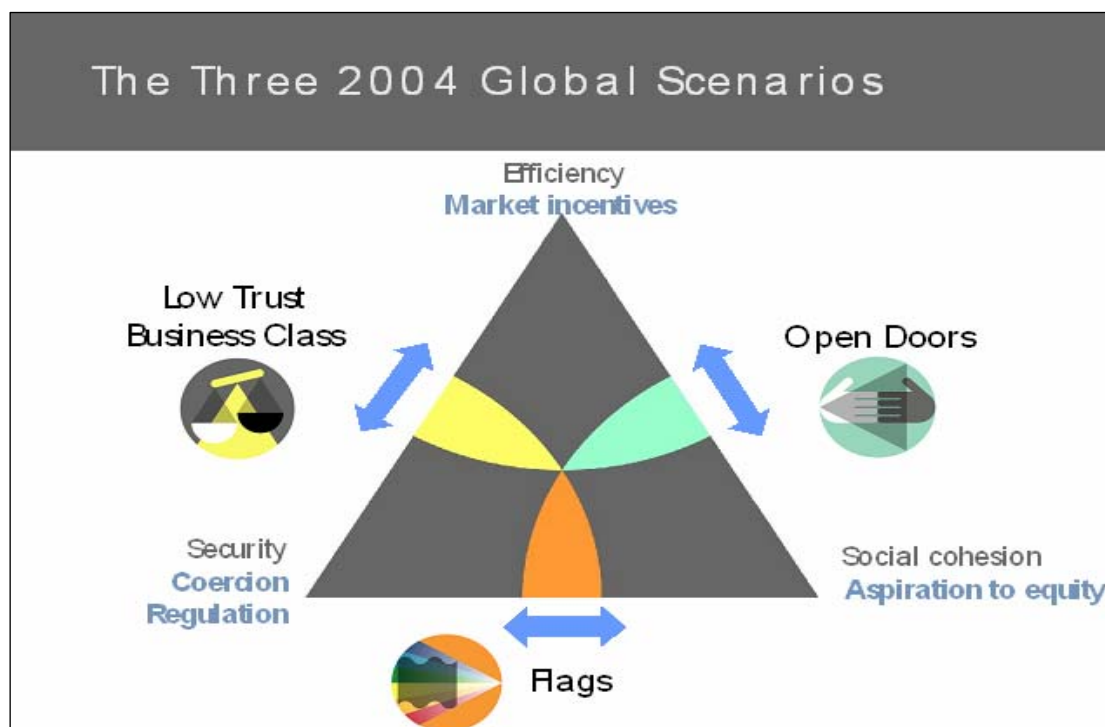
The Gulf region is politically one of the most volatile regions in the world and production increases may not be smooth. Even optimists contend that political decisions by governments, conflict, natural disaster, and price volatility could pose risks for expansion in production capacity.

Considering all these factors, it does seem that the era of cheap oil may be over. Thus, investments by China's NOCs seem sound as far as oil prices are concerned.

Political risk

China's investments face two kinds of political risks. One, there has been resurgence of state power in response to increasing concerns about security, including energy security and weakening of trust in markets. A number of oil rich countries are following a path of aggressive nationalism helped in part by rising oil prices, and consequently full coffers. The second risk arises from the fact that a large part of China's investments are in relatively unstable countries such as Sudan, Nigeria, Myanmar, etc.

Shell's latest scenarios provide an explanatory framework for the current rise in greater intervention of the State in energy markets. These scenarios describe a world in which there are constant tensions between the aspirations for economic efficiency, social cohesion and security. Since these three aspirations cannot all be completely satisfied concurrently, the world operates via trade-offs in which two of the aspirations become more dominant relative to the third.



They have, therefore, described three possible worlds in which these tensions play out:

1. Open Doors, explores a world in which the drive for market efficiency is in balance with civil society's ongoing concerns to maintain or improve social cohesion, inclusiveness and access to equity. In this world the state prefers to operate via incentives – pragmatic regulatory harmonization, strong independent media, voluntary best-practice codes and close links between investors and civil society support open markets, cooperation, high innovation and rapid economic development. Open markets combined with strong free trade growth facilitated by multilateral lowering of trade barriers allow world economic growth to follow a strong path, just above the historical average, and consequently requiring a high energy demand growth path. Energy markets in this scenario evolve following free market principles, responding to consumer preference for cleaner fuels and equitable resolution of environmental externalities via the pricing mechanism. International natural gas trade would expand most rapidly in this world allowing greater access to a cleaner fuel. Renewable energy and clean coal technologies also become more prominent in response to societal preference, but need to be competitive as well. Take-up is consequently slower than in the other scenarios.

2. Low Trust Globalization, is a world in which the aspiration for market efficiency remains strong, but in which the state exerts a strong role in providing the public good of security, influencing choices, via regulation and other oversight instruments aiming to guarantee public and investor security. Institutional barriers and slower innovation would result in somewhat lower economic growth, slightly below the historical average, with world energy demand growing at about the same rate as has historically been the case. Energy markets in this scenario are more clearly focused on responding to policy objectives of achieving energy security, e.g., by proactively pursuing diversity of supply, whether of the same commodity or alternative fuels, and by supporting interconnection of infrastructure networks, increasing regulation to accommodate cleaner fuels, like renewables, in the market and by demand policies.

3. Flags, describes a world in which the strong role of the state focuses more on social cohesion than on market efficiency. Here national preference is more prominent; regulation tends to be more fragmented and tailored purely to national concerns; trade is conducted on a bilateral basis; and latent tensions in international and inter-community relations are sustained. The more fragmented nature of international economic relations in this scenario leads to a low annual economic global growth rate, almost a percentage point below historical averages, and consequently a low rate of world energy demand growth. For energy markets, this would mean a reversion to national policies promoting domestic energy sources and securing imports by bilateral contracts; global environmental initiatives would lose impetus with the focus shifting back to local pollution issues, leading to fragmentation of approaches to mitigation; and competition for access to energy resources and markets could favour energy companies which are either state-controlled or which receive strong support from their home governments.

These scenarios are not mutually exclusive. It is quite possible that different regions/ countries of the world operate in different scenario worlds. Oil and gas rich countries like Russia, Venezuela, Bolivia, etc., are re-asserting control over their resources.

In Venezuela, the consultancy Wood Mackenzie calculates, the state has seized back \$5.4bn from international oil companies by changing contract terms. The contention is that the old contracts were negotiated at a time when oil prices were low and the previous regime offered too generous terms to attract international oil companies to Venezuela. Under the new contracts PDVSA, its national oil company, has increased its stake in joint ventures with international oil companies from around 20 per cent to about 60 per cent.

Bolivia nationalized its energy industry this year. The Army was sent to seize gas fields and international oil companies were threatened with expulsion within 180 days if they did not agree to new – and far less favourable – contracts. Evo Morales, its recently elected left-wing president, declared: “The time has come, the awaited day, a historic day in which Bolivia retakes absolute control of our natural resources.”

Russia has been retaking control of its oil and gas assets from private companies including MNCs. In a recent move, Shell offered to cede majority control of the \$20bn Sakhalin-2 project to Gazprom, the state-controlled gas giant. Shell's agreement to reduce its 55 per cent stake followed in the wake of sustained pressure from the Russian authorities, which have threatened to revoke licenses and open criminal investigations for alleged violations of environmental rules.

It is quite possible that China's NOCs may face similar situations in the countries in which they operate. In Kazakhstan, the Government claimed a 500 million dollars worth of charge on CNPC for violation of the country's anti-monopoly laws following CNPC's 100% acquisition of PetroKazakhstan for \$4.18 billion. CNPC subsequently transferred a 33% stake to Kazakhstan government for \$1.4 billion.

The second risk comes from the unstable political climate of the countries it invests in. State-to-State deals may tilt the deal in favour of NOCs but they are no guarantee against militia attacks as in the case of Nigeria. On April 29 of this year, a car bomb was detonated near an oil refinery in the southern Nigerian city of Warri, just three days after President Hu Jintao visited Nigeria. A number of deals were agreed to during the visit, including preferential bidding rights for Chinese companies for four oil-exploration licenses in return for a \$4 billion investment in Nigeria's infrastructure. The Nigerian militia group claiming credit for the attack wrote in an e-mail to the media, "We wish to warn the Chinese government and its oil companies to steer well clear of the Niger Delta." "Chinese citizens found in oil installations will be treated as thieves. The Chinese government, by investing in stolen crude, places its citizens in our line of fire." Niger Delta militia groups have shut in about a quarter of Nigeria's oil production. The attacks are aimed at pressurizing President Olusegun Obasanjo's government to share more oil revenue with impoverished Delta residents.

In Ecuador, Andes Petroleum Co., a venture owned by China Petrochemical Corp. and China National Petroleum Corp., has asked for a refund from EnCana Corp. for recently purchased oil assets in Ecuador, after the country seized an oilfield included in the deal. Andes Petroleum had acquired five blocks as well as a 36% stake in OCP pipeline from Calgary-based EnCana Corp for approximately \$1.42 billion. EnCana had owned one of the fields in partnership with Occidental Petroleum Corp. and the Ecuador government cancelled Occidental's right to operate the field over a long-running dispute on oil taxes. At one time, protestors demanding more petro-dollars for infrastructure projects had also forced the closure of the oil pipeline, in which the Chinese own a stake.

In Zambian elections this year an election candidate made Chinese investment an issue, promising to recognize Taiwan if elected. The precipitating reason was working conditions in Chinese owned copper mines and impact on the local industry of cheap Chinese imported goods. Several Zambian mineworkers were shot and injured in July after a violent protest at the Chinese-owned Chambishi Mining. There are conflicting reports on

whether Chinese managers or Zambian police shot the workers. China's ambassador in threatened to cut diplomatic relations with Zambia were opposition candidate to be elected as president.

Delay in projects caused by violent attacks by militia groups or even angry public protests could reduce the value of projects owned by China's NOCs.

Section 3

Risks arising from competition with other oil importing countries

Activities of China's NOCs across the globe in their quest for oil and gas resources are a cause of concern for other countries for two reasons. One, they encroach on their traditional sphere of influence. Second, they sometimes involve deals with so-called rogue states, thereby undermining international efforts in isolating these regimes.

In the first category fall deals with countries such as Venezuela, Canada, etc., and activities in the Caspian region.

Venezuelan president, Hugo Chávez, has been seeking closer ties with China in a bid to weaken ties with the US. Currently it sends 1.5m barrels per day of oil to the US, about two thirds of its total petroleum exports. In December 2004, Venezuela's president stated "We have been producing and exporting oil for more than 100 years....But these have been 100 years of domination by the United States. Now we are free, and place this oil at the disposal of the great Chinese fatherland." In January 2005, Vice President Zeng Qinghong visited Caracas and signed 19 cooperation agreements including Chinese investment projects in Venezuelan oil and gas fields. In 2006, Chavez signed 28 investment accords worth a reputed \$11bn on a visit to China. Caracas has already increased oil exports to China from 14,000 barrels a day in 2004 to 70,000 b/d, and Mr. Chávez recently said the medium-term goal was to treble that volume to 200,000 b/d.

Growing ties along with the stated objective of Chavez to reduce oil flow to the US prompted the Senate Foreign Relations Committee to mandate contingency plans, should Venezuela stop supplying oil to the U.S.

China's NOCs have also invested in Canada's oil sands projects. CNOOC Ltd has taken a 16.69% stake in the privately owned, Canada-based MEG Energy, for C\$150 million (\$135 million). Sinopec has acquired 40% of the Northern Lights Oil Sands Project in Alberta, Canada, at a cost of C\$150 million. Enbridge of Calgary, an operator of oil pipelines has entered into a Memorandum of Understanding with PetroChina to cooperate on the development of the Gateway pipeline and supply of crude oil from Canada to China. The Gateway pipeline is expected to move 400,000 b/d of Alberta oil sands production from Edmonton to the west coast of British Columbia, where it would be shipped to China, other Asia-Pacific markets, and California. Enbridge will help PetroChina to aggregate long-term supplies of Canadian

crude oil. The US has always claimed first right over Canadian oil and gas resources. Vice President Dick Cheney emphasized the importance of Canada's tar sands to U.S. energy security in his 2001 national energy policy report. Moves by China's NOCs in the US backyard are bound to cause nervousness in US policy circles.

The Caspian region is another area where China's interests could clash with those of western nations. Following the break-up of the Soviet Union, the strategic location of the region, between Russia and Iran, coupled with its energy potential attracted the attention of western nations to this region. In order to break monopoly of Russia over oil export infrastructure in the region, the US backed the construction of the \$3.6 billion, 1100 mile Baku-Tbilisi-Ceyhan (BTC) pipeline by-passing both Russia and Iran. The BTC pipeline was commissioned this year and will carry 1 mb/d of oil when it comes fully on stream in 2009. Although initial expectations were that Azerbaijan might become a new Saudi-Arabia, it is Kazakhstan that has the most promising oil fields in the region. The three mega projects are Tengiz – operated by Chevron with ExxonMobil and Kazmunaigaz, Kazakhstan's national oil company, holding minority stakes; Karachaganak – the world's largest gas condensate field, operated by ENI and BG with Chevron holding a minority position; and Kashagan – the largest single discovery in the past 25 years which is currently under development by a consortium led by ENI with ExxonMobil and ConocoPhillips among the project partners. Kazakhstan's exports currently average 800,000 barrels per day, with the potential to increase upwards of 1.6 million barrels per day by 2010, and by 2020 nearly 3.6 million barrels per day.



The formal agreement to send a proportion of Kazakhstan's crude oil exports through the BTC pipeline was signed by President Nursultan Nazarbayev in Astana on 16th June of this year. The agreement effectively secures the medium-term commercial viability of the BTC project in that it is now no longer solely reliant on throughput from the Azeri-Chirag-Guneshli (ACG) offshore complex, production from which is set to peak at 1.2 million barrels per day in 2010, before steadily declining to 400,000 barrels/day by 2022.

China is also seeking access to Kazakhstan's oil reserves. In March 2003, CNPC completed the 279-mile Atyrau-Kenkijak oil pipeline with a total investment of \$160 million, to transport oil from Kenkijak field to the Caspian Sea. In the long-term, flow will be reversed to allow China access to Caspian oil when Kazakh-China pipelines are built.

The Atyrau-Kenkijak pipeline is considered the first section of the plan; the second section, completed in December 2005, stretches from the central Kazakh site of Atasu to the Chinese border town of Alashankou. The cost of the Atasu-Alashankou line is \$700-800 million, divided equally between China and Kazakhstan. In China, the pipeline will extend from Alashankou to Dushanzi. The first oil shipment flowed through Atasu-Dushanzi pipeline in July 2006. The Atasu-Dushanzi pipeline is 809 miles long, 168 miles of it in China. The next phase will connect Kenkijak with Atasu, a distance of 834 miles.

The total length of the pipeline from Atyrau to Dushanzi will be 1,922 miles. The capacity of pipelines is initially set at 200,000 b/d and is expected to rise to 400,000 b/d. The basic source of oil will be the fields of Kumkol group in the southwest of Kazakhstan. Kazakhstan has also offered to ferry Russian oil through this pipeline. However, the pipeline would still be underutilised and it is expected that oil will flow from other fields in the country. This in turn could affect the flow of oil to the west, thereby setting the stage for conflict.



Source: EIA

In the Middle-East China has expanded its engagement with traditional US ally - Saudi Arabia. Saudi Arabia has sought to hedge its bets following 9/11, and the consequent backlash against Saudi-Arabia in the United States, by strengthening its ties with China. In 2004, Sinopec won one of the three concessions awarded by Saudis to foreign energy companies to develop the kingdom's non-associated gas resources. The deal seems motivated more by political rather than commercial considerations. In return, China has attracted Saudi investments in its downstream sector. The Saudis have also turned to China to help recycle some of the liquidity accumulated as a result of record high oil prices.

Another important element of China's NOCs acquisition strategy has been investments in countries shunned by the West due to their poor human rights records, for failure to comply with international laws and/or to prevent nuclear proliferation. China's investments bolsters such regimes to the great mortification of the US and EU. This is reflected in the statement of Chris Hill, the assistant secretary of state for East Asian and Pacific affairs, to a subcommittee of the U.S. House of Representatives wherein he maintained that a major task for the United States and its Asian allies was "to ensure that in its search for resources and commodities to gird its economic machinery, China does not underwrite the continuation of regimes that pursue policies seeking to undermine rather than sustain the security and stability of the international community." He also stated that, "The biggest impact on U.S. national interests is China's willingness to invest in and trade with problem states (Iran, Sudan, Burma). We are concerned that China's needs for energy and other resources could make China an obstacle to U.S. and international efforts to enforce norms of acceptable behavior and encourage China's participation in international organizations to counter this tendency."

China has successfully thwarted attempts to impose sanctions on Sudan for human rights violation in the Darfur region. CNPC's investments in Sudan are by far the largest and most successful of its global oil operations. Sudan supplied 5% of China's oil imports in 2005.

China has also signed oil and gas deals with Iran. Under a Memorandum of Understanding signed with Iran, Sinopec will buy 250 million tons of liquefied natural gas over 30 years from Iran and develop the giant Yadavaran field. Iran is also committed to export 150,000 barrels per day of crude oil to China for 25 years at market prices after commissioning of the field. The value of the agreement amounts to about \$100 billion. China along with Russia has been complicating US efforts to impose sanctions against Iran.

US-China ties have already been under strain due to the record US current account deficit. The current account deficit in the US has climbed to about 7% of GDP. Its bilateral trade deficit with China is estimated to be at least \$225 billion in 2006 and equal to 25% of America's multilateral trade deficit. The US policy makers have claimed that the undervalued Chinese yuan has been responsible for widening the US trade deficit. There has been intense pressure on China to revalue its currency. Last year, the US Congress

threatened to impose a 27.5% tariff on imports from China. Since early 2005, 27 pieces of anti-China trade legislation have been introduced in the American Congress. The slow-down in the US economy could intensify the calls for trade-protectionism in Washington. In this atmosphere, energy related activities of China could further antagonise the US.

China's growth dynamic is exceptionally dependent on exports. Exports are likely to exceed 35% of Chinese GDP this year. A 5% loss in exports would knock-off nearly 2% from its GDP, a loss too huge to be offset by fiscal spending. Thus, any trade-spat with US will have an adverse impact on its economy. This, in turn, could threaten its social stability. China is a political autocracy and its political class has banked on ever-rising levels of economic prosperity to keep discontent at bay. Protests have been growing in China against official abuse and corruption and widening inequality. A sudden slow-down in economic growth could escalate popular unrest. China is not completely powerless in its relation with the US. It currently holds nearly one trillion dollars in reserves. A sudden offloading of dollars by China would have serious consequences for the dollar's status as the world's leading currency, and consequently for the US economy.

While the US is concerned about China's activities in its traditional areas of influence, China is equally wary about US activities. It feels that the US would try to contain China through economic means including blocking its access to natural resources. The fear is reflected in the statement of Zheng Chenghu Director General for Kazakhstan, China National Petroleum Corporation (CNPC) as quoted in Kleveman's *The New Great Game* - "Our situation has much deteriorated recently. The Americans are driving us out of the region. Since September 11, the United States has become very aggressive in Central Asia. The fact they have stationed their troops here is not good news. . . The U.S. troops are here in order to control the oil reserves in Central Asia . . . The control works indirectly. . . In Kyrgyzstan the American military is stationed very close to the Chinese border. The United States has bases in Japan, in the Philippines, in South Korea and Taiwan. And now here-China is going to be encircled!" Growing US military ties with India are seen as part of the said containment policy.



One major area of concern for China is the Malacca Straits. Nearly four-fifth of China's oil imports come through Malacca Straits. According to Zhang Yuncheng of the Beijing Chinese Institute of Contemporary International Relations, "Whoever controls the Strait of Malacca and the Indian Ocean could block China's oil transport route."



The Taiwan Strait is another area of concern. China is worried that Taiwan could disrupt oil shipments in case of war.

China is adopting so-called “string of pearls” strategy to counter this threat. The pearls include facilities in Pakistan, Bangladesh, Myanmar, Thailand, Cambodia and the South China Sea. Gwadar port in Pakistan and the pipeline from Sittwe, Myanmar, will play a vital role in

providing an alternate transit route for oil imports to China. Chinese military experts have recommended a change in its naval strategy from coastal protection to oceanic defense. According to a report written for the Pentagon by the consulting firm Booz Allen Hamilton, “China is building strategic relationships along the sea lanes from the Middle East to the South China Sea in ways that suggest defensive and offensive positioning to protect China’s energy interests, but also to serve broad security objectives.”

Although China seeks to develop its naval capabilities, there are not any signs of conflict arising out of American influence in Malacca Straits. The potential flash point for any conflict with powers in the region would be threat of Taiwanese independence. China is extremely sensitive on this count. Escalation of conflict due to Taiwan would draw US and its allies in the region into conflict. Were China to occupy Taiwan, it could easily choke off international commercial shipping, especially oil, to Japan and South Korea.

Thus, to the extent that Chinese overseas oil equity is meant to be shipped home, it remains vulnerable to threat of physical blockade.

Section 4

An India perspective

China is growing at a double-digit rate and likely to continue to do so in the next 25 years. It will require increasing amounts of energy even as fossil fuel reserves are shrinking and new finds are harder to come by. Chinese energy requirements will (rise significantly from the current level of) double from the current levels of under 7 mbpd to around 13 mbpd or, in other words, from the 8% or so of current global consumption to around 15% by 2020. (According to the IEA, China’s imports will double from 3 mbpd in 2005 to 6 mbpd.) Thus, China will be a competitor to the major - and emerging - economies for the same scarce resources. In order to secure access and supplies, China can be expected to use all available instruments including state funding and political tools even as it seeks to curb demand by improving efficiency and promote conservation for environmental and other reasons.

What does it look like from the Indian perspective?

The goal of the Government of India is to attain, in so far as is possible, energy independence through development of renewable sources and nuclear energy. The X1th Five Year Plan (2007-12) of the Indian Planning Commission has considered the different estimates of the energy requirements of India over the next 25 years. The X1th Five Year Plan (2007-2012) estimates that coal which meets about 60% of total primary commercial energy demands and generates about 70% of the power, is likely to remain the dominant source for energy in India. The coal and lignite reserves are abundant and, at current levels of consumption, could last anywhere from 80 to 140 years. Also, only about half of the coal bearing areas has been exploited thus far; new areas being brought under mining could alter this estimate.

At 0.16 kgoe, India's energy intensity expressed in terms of oil consumption per US\$ of GDP is lower than the world average of 0.21 kg; China consumes 0.23 kgoe, in comparison. In so far as requirements of oil is concerned, the estimates studied by the Indian Planning Commission vary from a low of 235 MT to 368 MT depending on whether one takes the low or high estimated rates of growth. (low of 1351 Mtoe to high of 1702 Mtoe.) The crude oil reserves are a mere 786 MT and sufficient at current levels of demand for just seven years. There has been no major new discovery in the past three decades. The silver lining is that only one third of the potential oil bearing area has been explored; also that large gas reserves have been discovered. It is estimated that the proven gas reserves could last for 50 years. Even if all the measures taken or planned – exploiting domestic resources, enhancing efficiency, reducing demand, use of new technologies etc - are successful, India would still remain dependent on imports to a substantial extent and will have to develop strategies for market access, minimizing supply risks and ensure affordability in price.

India's Hydrocarbon Reserves

Resources	Unit	Proved	Inferred	Indicated	Production in 2004-05 (Q)	Net Imports in 2004-05 (M)	Reserve/ Production Ratio	
		(P)	(I)				P/Q	(P+I)/Q
Coal (as on 1.1.2005)	Mtoe	38114	48007	15497				
Extractable Coal**	Mtoe	13489	9600-15650		157	16	86	147-186
Lignite (as on 1.1.2005)	Mtoe	1220	3652	5772				
Extractable Lignite	Mtoe	1220			9	-	136	136
Oil (2005)	Mt	786*	-	-	34	87	23	23
Gas (2005)	Mtoe	1101*	-	-	29	3 (LNG)	38	38
Coal Bed Methane	Mtoe	765	-	1260-2340				
In-situ Coal Gasification***		?	?					

Source- planning commission of India.

Reserves/Production of Crude Oil & Natural Gas (India)

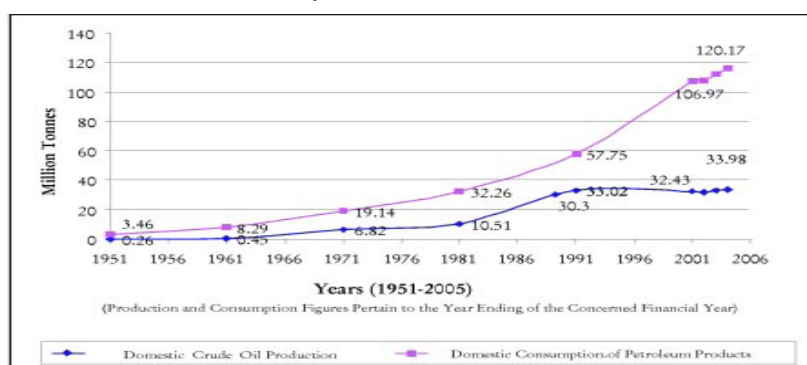
Year	Crude Oil (Mt)		Natural Gas (BCM)	
	Reserves*	Production	Reserves*	Production
1970-71	128	6.9	62	1.4
1980-81	366	10.5	351	2.4
1990-91	739	32.2	686	18.0
2000-01	703	32.4	760	29.5
2001-02	732	32.0	763	29.7
2002-03	741	33.0	751	31.4
2003-04	761	33.4	853	32.0
2004-05	739	33.9	923	31.8
2005-06(p)	786	33.2	1101	32.2

(p) Provisional

* Reserves position as on 1st April of commencing year

Source: Ministry of Petroleum & Natural Gas- GOI.

Domestic Consumption and Production of Crude Oil



Source: Ministry of Petroleum & Natural Gas

Currently, more than half of the Indian imports are sourced from the Gulf. The five major sources of supply for India are: Saudi Arabia (25%), Nigeria (16%), Kuwait (12%), Iran (10%) and Iraq (8%), accounting for over two-thirds of the total imports. Government of India, as a matter of policy is committed to acquisition of energy assets abroad primarily as commercial investments and prefers securitization of such acquisitions through international financing rather than 100% equity. Government of India would also prefer to diversify the import basket to include additional energy sources (gas, LNG, coal, ethanol etc). The Plan estimates that in the next 25 years, India's share of the world's fossil fuel supplies would double from the current level of under 4% to 8-10% depending on growth scenarios. (The assumption is that world consumption in this period would rise from around 80 mbpd to 110 mbpd.)

Sources of India's Oil Imports – 2004-05

	Country	Oil Imports (Mt)	% of Total Imports
Middle East Region	Iran	9.61	10.03
	Iraq	8.33	8.69
	Kuwait	11.36	11.85
	Neutral Zone	0.15	0.15
	Oman	0.14	0.14
	Qatar	1.19	1.24
	Saudi Arabia	23.93	24.96
	UAE	6.43	6.71
	Yemen	3.51	3.66
	Sub Total	64.64	67.43
Other Regions	Angola	2.44	2.55
	Brazil	0.29	0.30
	Brunei	0.81	0.84
	Cameroon	0.35	0.36
	Congo	0.14	0.14
	Egypt	2.12	2.21
	Equador	0.15	0.16
	Equitorial Guinea	1.66	1.73
	Gabon	0.28	0.29
	Libya	1.47	1.53
	Malaysia	3.43	3.58
	Mexico	2.28	2.38
	Nigeria	15.08	15.73
	Russia	0.16	0.16
	Sudan	0.33	0.34
Thailand	0.27	0.28	
Sub Total	31.23	32.57	
Total	95.86	100.00	

In January 2006, the India and China signed a Memorandum on Cooperation in the field of Oil and Natural Gas providing for collaboration between their enterprises, from exploration to marketing including joint exploration and development of hydrocarbon resources in third countries. Their oil companies will establish a formal procedure to exchange information about a possible bid target, before agreeing to co-operate formally. Though China had outbid India's Oil and Natural Gas Corp (ONGC) in Angola, Nigeria, Kazakhstan and Ecuador, the recent joint purchase of a stake in a Syrian oilfield by ONGC and the state-owned China National Petroleum Corp could set a pattern for future deals. The Joint Declaration issued on 21 Nov 2006, during the visit of the Chinese President Hu Jin Tao to India, noted that for both countries, expansion of civilian nuclear energy programme is an "essential and important component of their national energy plans to ensure energy security" and they agreed to "promote cooperation in this field bilaterally as well as through multilateral projects such as ITER, and enhance exchanges in the related academic fields". If they live up to these agreements, such co-

operation could have a beneficial impact on international energy prices. But given the rising import dependency of both countries – in 15 years, Indian imports are expected to increase from 70% of consumption presently to about 85 per cent while China would import about half its oil consumption - they could remain competitors.

Saudi Arabia, as the largest exporter of oil, will naturally remain the most important partner for both India and China. Saudi Arabia too has an interest in seeking out China and India as the US draws down its purchases from Saudi Arabia - China has emerged as the Saudi Kingdom's largest customer, while the US share in Saudi oil exports has been going down after peaking in 2002 at 1.7 mbpd. It is a sign of the times that in January 2006, the first trip outside the Middle East that the Saudi king Abdullah bin Abdul Aziz al-Saud undertook since taking the throne in August 2005, was the first ever visit of a Saudi king to China and the second by a Saudi king to India in fifty years. Earlier, in December 2005, China held its first formal talks with the Organization of Petroleum Exporting Countries (O.P.E.C.). China has emerged from being a net exporter of oil until 1995 to the world's second-largest oil market after the U.S. It has been estimated that by 2010, 95 percent of China's imported oil will come from the Middle East. (Presently, more than half of oil imports are from the Gulf; Saudi Arabia accounts for about 17 percent). Saudi Arabia is also a major investor in China - Saudi Arabia's Aramco Overseas Company has provided US\$750 million of the total US\$3 billion in investment to construct a petrochemical complex in south-eastern Fujian province in China that will process eight million tons of Saudi crude oil. Others like Kuwait are joining in to build a new refinery in Guangzhou, involving a total investment of US\$8 billion. Saudi Arabia is China's largest trading partner in the region between West Asia and North Africa with a two-way trade of (approx.) US\$15 billion. China is Saudi Arabia's fourth largest importer and fifth largest exporter while Saudi Arabia is China's tenth largest importer and biggest oil supplier. Saudi Arabia and China have developed close military ties with Saudi Arabia having imported the Chinese CSS-2 nuclear-capable, intermediate-range ballistic missiles with a 3,000 kilometre (1,864 miles) range and prospects of purchase of the more advanced CSS-5 and CSS-6 missiles. Their agreement on energy cooperation calls for increased cooperation and joint investment in oil, natural gas, and mineral deposits. The Indo-Saudi "Delhi Declaration" also calls for a wide-ranging strategic partnership in the energy sector with major investments in the petroleum sector. Saudi Arabia has invited India either to participate alone or to form joint ventures with Saudi companies to bid for gas exploration and refinery projects. Thus, Saudi Arabia sees in both China and India growing markets that could offset any diminution in the US interest in Saudi oil. In the immediate future, this places Saudi Arabia as exporter and China and India as importers in a relatively comfortable situation. But should there develop a competition between China and India over energy resources, Saudi Arabia may have to rethink its options.

China, for its own reasons, needs a strategy to deal with India given the emerging relationship with the US symbolized by US support for India's civilian nuclear energy development. Energy cooperation with India, for political and for commercial reasons, makes for a good strategy. The oil

assets abroad won by Chinese companies have come at a price. It is generally believed that China has overpaid for some of them thereby making their profitability questionable. One major factor pushing up the price is the competition between India and China. Thus, China National Petroleum Corp (CNPC) paid \$4.18 billion to acquire Canadian Oil Company PetroKazakhstan for which India's ONGC had bid \$3.9 billion.

China is aware that as its need for oil imports grow, clashes with other countries also looking to secure energy supplies could increase. An unbridled competition will be harmful and hence the necessities of cooperating to share risks and reduce costs. The market may well dictate that companies submit competing bids but if there is sufficient exchange of information along with the building of trust and confidence there will be occasions for working together.

The improvement in India-China relations, in recent years, has opened up possibilities though problems arising from accumulated mutual distrust and divergent strategic interests will have to be overcome. In China the state runs the energy policy. It remains to be seen whether it trusts India sufficiently to build an energy partnership in line with its stated objective of a "strategic partnership" with India or whether Chinese firms feel themselves sufficiently threatened by the prospects of a bidding war with India to drive the Chinese state to form such a partnership.

China's own drive to secure energy security is underway. The proposals under consideration include construction of pipelines from the neighbouring ASEAN and South Asian countries like Myanmar (Rakhine and Sittwe to Kunming in Yunnan), Thailand, Pakistan (connecting Xinjiang with Gwadar) and Bangladesh. Tapping the surplus energy of Myanmar and Bangladesh serves the purpose of edging out India in its own backyard while the web of regional pipelines reduces China's dependence on the Malacca Strait for the transport of its energy supplies from West Asia and Africa. The Chinese interest in UNOCAL could be of a piece given its experience in oil and gas exploration in Myanmar and Bangladesh.

From an Indian perspective, therefore, China will continue to remain a competitor and, possibly a potential partner. The domestic strategies being followed by each to ensure energy security are similar – enhancing domestic production, encouraging conservation, reducing inefficiency, utilizing new technologies, promoting R&D in renewables and expanding nuclear energy. Externally, the Chinese effort will clearly be to expand and diversify its market access and supply, including through the acquisition of assets abroad, even if at more-than-market prices. In so far as the production of global fossil fuel supplies continue to rise incrementally, India is unlikely to see in China a threat to its energy security. This is tied also to the success that India is able to achieve in its own planned expansion of energy availability through non-fossil fuel alternatives – conventional and non-conventional. Given India's record of a gap between potential and performance, though, one cannot be sanguine that India's dependence on fossil fuels will not continue and become a factor of competition with China in securing energy supplies. This would need to be monitored.

China's fast-paced growth will continue to exert pressure on global energy supplies and prices. Given its over-riding political compulsion to maintain high growth rates to maintain stability and stave off pressures generated by social unrest, China is unlikely to find reason to bow to international opinion

regarding the acceptability of the source country on account of its political complexion, human rights record etc. The Chinese state, equally, will continue to back its oil companies – politically and financially – in its ventures abroad since they serve as instruments for attaining an objective set by the state. To the extent to which the energy supplies remains market driven, China has the resource availability to pay for its purchases. To the OPEC majors, China represents, politically, a no-strings partner and, economically, an alluring investment destination.

Section 5

An analysis of Indian Oil and Gas Sector Industry

The consumption for petroleum products including refinery fuels grew from 2.72 Mt in 1947 to 120.17 Mt in 2004-05. Excluding refinery fuels, the consumption of petroleum products in 2004-05 was 111.59 Mt. India exported 18.21 Mt of products in 2004-05 and product exports have risen to 21.5 Mt in 2005-06. However, domestic consumption in 2005-06 rose only marginally to reach 111.92 Mt. India is now a net exporter of petroleum products. The crude oil production, which had increased from merely 0.25 Mt in 1947-48 to 33.02 Mt by 1990-91, has stagnated since then. The balance requirement has been met through imports. With the setting up of a number of refineries over the years, the country is self-sufficient in its refining capacity which currently stands at 132.47 Mt. A number of refineries are either expanding their capacity or planning new investments with a view to export products. Net of export, domestic production of crude met about 28% of the country's requirement and the balance 72% was imported in 2004-05. With the increasing prices of crude oil in the international market, the oil import bill and oil security are causes of concern. To reduce the gap between demand and supply, in addition to enhanced production of crude oil & natural gas, the oil companies are seeking opportunities to tap coal bed methane, blend motor spirit with ethanol and promote bio-diesel as a diesel substitute and/or for blending with diesel. However, these efforts have yet to make any impact.

With a view to create competition, new entrants are being allowed to market transportation fuels namely, motor spirit, high speed diesel and aviation turbine fuel since March, 2002. The Government has issued retail licenses to Reliance Industries, Essar Oil, Shell, ONGC, Mangalore Refineries & Petrochemicals Limited and the Numaligarh Refinery.

With the recent discoveries in the Krishna-Godavari basin, domestic natural gas is expected to become the second most dominant commercial energy source in India. Efforts are being made to raise import of natural gas in the form of LNG and through trans-national gas pipelines. The rising price of natural gas, though, would make it uncompetitive for use in the power sector.

Till 1975, the prices of petroleum products were based on import parity prices. Based on the recommendation of the Oil Price Committee of 1976, the Administered Price Mechanism (based on a retention pricing concept) was

introduced. This mechanism was dismantled in a phased manner starting October, 1998 to 31st March, 2002. From 1st April, 2002, the prices of petroleum products except domestic LPG and Kerosene for Public Distribution System (PDS) are again being fixed on an import parity basis. However, with the recent steep increase in the prices of crude, the government has put on hold the increase in prices by the oil companies. The issue of pricing of petroleum products is under review.

With a view to protect the poorer section of the society; subsidies on kerosene and Liquefied Petroleum Gas (LPG) had been introduced. These subsidies were to be phased out by 31st March 2002, but this was not done. A flat subsidy rate under “PDS Kerosene and Domestic LPG Subsidy Scheme, 2002” was approved. The subsidy was equal to the difference between the cost price and issue price as on March 31st, 2002 and was to be phased out in 3 to 5 years. The oil marketing companies (OMCs) were to adjust the retail selling prices of these products in line with international prices during this period. Again, this has not been done and with the unprecedented sharp increase in the international prices, the under recoveries of OMCs on these accounts have been rising and seriously affecting their profitability. The Government has been making good these losses, in part, by asking upstream companies to offer discounts on the price of domestic crude and by issuing GOI bonds to the oil marketing companies.

The petroleum and gas sector is also devoid of any competition or independent oversight of either its upstream or the downstream activities. Despite the dismantling of the Administered Price Mechanism, the GOI continues to control the pricing of automotive fuels, LPG, a large part of domestic natural gas, and PDS kerosene. Again despite the presence of several domestic, public and private players as also some foreign groups, there is no real competition in the sector except in peripheral products such as lubricants. In fact, the prevailing pricing & taxation policies and the market structure provide significant protection to refineries. The result is that India’s refining capacity exceeds the demand by 18% already.

Competition is limited in the downstream sector to cornering retail outlets and is often wasteful. Efficiencies in retailing can only be realised if companies are allowed to set their own prices and entry barriers for new entrants are dismantled. These barriers currently include minimum investment requirements and lack of open access to certain marketing infrastructure. The Petroleum & Natural Gas Regulatory Board Act, 2006 has already been notified and should, hopefully, raise the level of competition in the sector on level terms.

On the upstream side, the dominance of the public sector continues although in recent rounds of bidding under New Exploration Licensing Policy (NELP) domestic private sector and state sector participation and, to a more limited extent, foreign participation has emerged. India’s currently known oil and gas reserves will be exhausted in 23 years and 38 years respectively at current production levels. While exploration has not resulted in any significant new oil find, large gas finds have been reported though uncertainty still

prevails with respect to precise gas availability. The current upstream regulation provided by DGH is neither independent nor comprehensive in a technical sense with respect to optimal development of the hydrocarbon resources.

Given its lack of success in finding oil and gas in the Indian sedimentary basin, ONGC has been successfully acquiring equity oil and gas overseas. While these are largely commercial opportunities, they do help energy security concerns to the extent that they increase access to a more diversified supply base under certain eventualities. Indian Oil Corporation has also successfully tapped retailing and refining opportunities overseas. Other players have also looked at various opportunities overseas but with little success. The risks of the overseas operations are largely being carried on the balance sheets of the parent Indian companies.

In order to meet the shortfall in the demand of natural gas, imports from Iran, Myanmar and Central Asian Countries through transnational pipelines are being pursued. The import of gas in the form of liquefied natural gas (LNG) has already started at the Dahej LNG terminal in 2005. Other avenues for import of LNG are also being explored.

Annexure 1

Overseas Investments by Chinese NOCs

Country	Year	Nature of Investment
Canada	1992	CNPC Canada purchased reserves for Canadian \$6.64 million.
	1993	CNPC Canada purchased reserves for Canadian \$5 million.
Peru	1993	Sapet Development Corporation, a subsidiary of CNPC, bought the Talara Block for \$25 million.
Thailand	1993	CNPC signed a production-sharing contract to develop Sukhothai field.
Papua New Guinea	1994	CNPC joined a consortium with other foreign firms, including China International Trust and Investment Corporation, Marubeni, and America Garnet Resource,

		and won two exploration blocks offshore of Gulf Province in 1994 (Block 160) and 1995 (Block Kamusi).
Indonesia	1993	CNOOC purchased a 32.58% interest in an oil field in the Straits of Malacca. In 1995, an additional 6.93% interest was purchased to become a majority shareholder.

Country	Year	Nature of Investment
Egypt	1998	The Great Wall Oil Well Drilling Company, a subsidiary of CNPC, and two Egyptian companies signed an agreement to form a joint-investment company.
Mongolia	1998	China's Haifu Industrial Company and Mongolia's Oyuni Undraa Suuba Company signed a \$29.7 million contract for oil extraction and the joint construction of a refinery in southeastern Mongolia.
Turkmenistan	1998	China Oil and Building Corporation invested \$14 million to restore oil wells. In 1998 and 2000, China extended credit lines worth about \$12 million to Turkmenistan for the purchase of Chinese drill rigs.
Iran	2000	CNPC won a contract to drill 19 gas wells in southern part of the country
Azerbaijan	2001	CNPC finalized a PSC for the K&K oil field project.
Australia	2002	CNOOC paid \$348 million for an interest in Australia's North West Shelf LNG project.

Major overseas investments since 2002

Country	Year	Nature of Investment
Indonesia	2002	CNOOC bought Indonesian assets of Repsol-YPF for \$585 million.
	2002	CNOOC invested \$275 million to acquire from BP PLC a 12.5% interest in the Indonesian Tangguh LNG Project. In 2004, CNOOC raised its share to 17% by buying a stake from BG Group Plc for \$98.1 million.
	2002	CNOOC entered into an agreement for 25-year LNG supply worth \$8.5 billion from Tangguh in Papua province to China's Fujian province.
	2003	PetroChina purchased 50% of Amerada Hess Indonesia Holding Co. Through this purchase, PetroChina's share in the Jabung PSC block increased from 30% to 42.86%.
Australia	2002	CNOOC paid \$348 million for an interest in Australia's North West Shelf LNG project.
Indonesia	2003	PetroChina purchased a 45% interest in an operatorship in an Indonesian field.
Kazakhstan	2003	British Gas Group announced the sale of its 16.67% interest in the Kashagan field to CNOOC and Sinopec. Subsequently, five of the six partners in the Kashagan consortium exercised their preemption rights and blocked the Chinese companies from investing.

	2003	CNPC purchased a 25% interest in Aktobemunaigas Corp, increasing its total interest to 85%.
	2003	CNPC acquired 35% of the joint venture Texaco North Buzachi Inc. from Nimir Petroleum. In September 2003, CNPC bought out ChevronTexaco's interests to become the sole owner of the rights to develop the field. In February 2004, CNPC conveyed a 50% stake in the project to the Canadian company Nelson Resources for \$90 million. The joint venture is now Nelson Buzachi Petroleum B.V.
	2005	CNPC/CNOOC signed an MOU with KazMunaiGaz to explore the offshore Darkhan field, which is said to hold about 480 tons of fuel equivalent.
	2005	CNPC bought Petrokazakhstan, a Canadian-run company that was the former Soviet Union's largest independent oil company, for \$4.18 billion. CNPC further sold 33 % stake to Kazakh state oil and gas firm KazMunaiGaz for about \$1.4 billion.
Turkmenistan	2005	China signed an agreement on oil and gas cooperation; extended a low interest loan of US\$24 million to Turkmenistan for the development of its oil and gas industry.
Uzbekistan	2005	UzCNPC Petroleum joint venture was established- envisages a \$600m investment in more than 20 small oilfields dotted around eastern Uzbekistan. Agreement was signed between Uzbekneftegaz, and Sinopec to develop non-operational wells and to explore further in the Andijan region. The Chinese government also granted a \$35m loan to upgrade Uzbekistan's gas pipelines and improve the transport system.
Algeria	2003	CNPC was awarded the Adrar-Sbaa basin integrated upstream-downstream project in Algeria. Project involved construction of 20,000 b/d refinery in the southern Adrar region with supply of crude oil and gas from the Sbaa region.
	2003	CNPC was awarded two upstream blocks, Block 102a/112 (Chellif) and Block 350.
	2004	Sinopec won 2 blocks in Algeria's fifth licensing round. One block won by CNPC.
Gabon	2004	Sinopec won the right to explore three offshore blocks; two onshore blocks.
Iran	2004	Sinopec signed a MOU for a 25-year \$70 billion agreement to import LNG in exchange for developing Yadavaran oilfield.
Mauritania	2004	CNPC owns a 65% stake in onshore Block 20 for exploration and production; 100% share of Blocks 12, 13, and 21 for exploration.
Nigeria	2004	Sinopec signed an agreement with Nigeria Petroleum Development Corp. to develop oil production in two

		blocks in the Niger delta (OML 64 and 66).
	2005	PetroChina Secured a five-year supply contact for 30,000 b/d in return for China's financing two badly needed power stations. Four oil exploration blocks reward for stake in Kaduna refinery.
	2006	CNOOC agreed to pay \$2.3 billion for a 45% working interest in Nigerian Oil Mining License (OML) 130 from South Atlantic Petroleum.
Angola	2004	Sinopec acquired 50% equity in offshore block 18, set to produce 200,000 b/d by 2007.
	2005	Sinopec secured 30% share in Block 3/5 (formerly block 3/80)
	2006	Sinopec won 27.5% stake in block 17, 40% stake in block 18 and 20% stake in block 15. Three blocks hold approximately 3 billion barrels of oil reserves.
Canada	2005	CNOOC bought 16.7% interest in oil sands company MEG Energy Group.
	2005	Sinopec purchased 40% in Northern Lights oil sands project for \$83 million.

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