State-Owned vs. Multinational Oil

New Rules for Market Intervention

Angelica Austin

EastWest Institute
Forging Collective Action for a Safer and Better World

www.ewi.info

About the Author*

Angelica Austin is an EWI Fellow working in Brussels with the Institute's policy innovation unit. As an independent research economist with nine years professional experience in several countries, she specializes in Asian energy and regulatory economics. Angelica is contributing to the development of a new EWI initiative on sustainable human safety, a multi-year effort to address new cross-boundary threats that have the potential to inflict previously unthinkable levels of disruption and destruction (resource crises over water and food, energy and resource shortages, and the forced migration of large numbers of people as the result of severe weather events or climate change). She has spoken at international conferences and other events, including EWI's Worldwide Security Conference in Brussels and an EWI seminar in Istanbul. She has published a number of studies on Asian energy. Her publication, *Energy and Power in China* (Foreign Policy Centre, London, 2005), is widely cited.

* *The EastWest Institute does not generally take positions on policy issues. The views expressed in this publication are those of the author and do not necessarily reflect the views of the organization, its Board of Directors, or its staff.*

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For more information about the EastWest Institute or this paper, please contact:

The EastWest Institute
700 Broadway,
New York, NY 10003,
212.824.4100
communications@ewi.info

Cover photo: REUTERS/Alexander Nemenov/Pool (RUSSIA)
Russian President Dmitry Medvedev (L) and his Venezuelan counterpart Hugo Chavez enter a hall at the presidential residence in Gorki outside Moscow July 22, 2008.

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Executive Summary

Energy markets, unlike financial markets and other goods and services, are more generally characterized by substantial government intervention. The energy sector is dominated by companies that either had or still do have substantial support from national governments. Beyond the formal state-owned sector, private energy companies have always been under scrutiny and or control by government given the importance of providing reliable supplies of "essential services" and energy security to a country's people and businesses. This aim of governments has meant that domestic energy policy impacts on foreign policy in a number of ways, including escalating fears regarding resource nationalism when oil prices are volatile.

This paper provides an overview of existing research on the outcomes of government ownership and intervention in the energy sector through the example of state-owned oil companies as they compare with their so-called private sector counterparts. The purpose of this analysis is to improve the competitiveness of the energy sector while settling exaggerated fears regarding the negative effects of energy nationalism on the security of supply to other countries. This paper builds on work of the EastWest Institute beginning in 2005 on promoting confidence, trust and cooperation in global energy security.

Other essential characteristics of energy commerce include the regular occurrence of market failure, information asymmetries and potential market manipulation due to the oligopolistic market power of OPEC and in some cases multinational oil companies. High and rising oil prices in the first eight months of 2008 were in part due to infrastructure bottlenecks and short selling by hedge funds. The collapse in oil prices through October 2008 and since may have brought a sharper realization to many of the most powerful oil companies that they would benefit from a less volatile, more transparent and better regulated market.

State-owned energy companies will become even more important in coming years. According to the International Energy Agency, in the next four decades, developing countries – most with state-owned companies – will be the source of 90 per cent of all new supplies of oil. According to a Rice University study, state-owned companies already control almost 80 per cent of world oil reserves and will dominate the market in the future.

Recommendations

As a result of consistent market failure in the energy sector, there needs to be a global governance structure specifically aimed at regulating it to allow for more transparency and competition. This global corporate governance structure would primarily consist of multinational private energy companies and state owned energy companies. It would promote:

- greater transparency in reporting of government-owned enterprises in the energy sector, based perhaps on the adoption of the Extractive Industries Transparency Initiative
- introduction of domestic regulatory regimes in various countries to incorporate the idea of 'competitive neutrality' to provide greater competition between the oil majors and the new "seven sisters"
- energy market reform in the big sister state of origin countries to improve competition in domestic markets and allow for a more even 'playing field' to underpin new energy diplomacy between oil consuming and oil producing countries

- introduction of global accounting standards for energy companies that have either a controlling stake or a minority stake held by government in order to decrease cross subsidies between the domestic, often-legislated monopoly and off-shore investment
- a new complaints mechanism (an International Energy Tribunal) to ensure that that all stakeholder interests can be accounted for. This could be constructed along the lines of the anti-dumping provisions in the WTO or anti-trust procedures in terms of anti-competitive detriment.

Proposal for an International Energy Tribunal

WHAT?

- A mechanism to arbitrate disputes between competing interests in the global energy market
- A panel with advisory powers only framed in a similar manner to the anti-dumping procedures outlined under the General Agreement on Trade and Tariffs (GATT) and administered by the World Trade Organization (WTO) or the International Energy Agency (IEA)
- A competition and access arbitor

WHY?

- Globalization of the energy sector has led to the increasing internationalization of disputes over access to reserves by foreign governments and access to energy technology by host governments
- The number of such disputes has increased
- The Doha round has not provided an adequate basis for the inclusion of debates regarding the diffusion and uptake of new and emerging energy technologies
- Access disputes are often assessed by the local competition authority on the basis of anti-competitive detriment and end in most instances with the competition authority approving the asset sale to the off-shore companies
- The biggest hurdle in acquisition of energy assets by off-shore companies that is rarely met is the vetting by government on the basis of national interest
- Access to emerging energy technologies is also regulated on a national interest basis [or in the case of the European Union (EU) regionally] with patent rights and licensing arrangements. The Nuclear Non-proliferation Treaty (NPT) and bilateral agreements (India-US agreement on nuclear safeguards) regulate the diffusion of nuclear technology globally. These arrangements are a disguised form of protectionism, often intended to protect infant industries or, as in the case of nuclear energy, to provide a public good
- Restrictions on access to technology further concentrate the commercialization of emerging energy technologies in the United States and Europe to the disadvantage of other countries

HOW?

- The tribunal would be established by a treaty, a “general agreement” on energy security, similar to the “in principle” agreements enshrined in GATT

Introduction

The rapid rise in oil prices in the past year and the subsequent decline have created new uncertainties about some aspects of global energy regimes, national energy security, and human security. According to the IMF, less than half of a sample of 42 developing and emerging market countries fully passed on the sharply higher world oil prices to retail customers in 2007.

At the Group of Eight (G8) meeting in July, the IMF was directed to analyze the role of financial market speculation in the recent price hikes. In a broader energy sector context, state-owned enterprises have represented a substantial slice of the market, competing with big oil or now big energy. With declining revenues of the energy sector in oil producing countries and with the commodities bubble bursting, the short-term outlook remains volatile. This was in part a response to intensifying calls for new global leadership and international cooperation to stabilize energy markets.

The concept of international cooperation to stabilize energy markets was one of two main causes that led to the establishment of the G4 in 1974, the group that later became the G8. There has been important progress in multilateral efforts to bring energy markets into a more predictable and more competitive frame, but as the oil price volatility shows, the energy sector remains – ironically – both under-regulated internationally and over-regulated domestically.

Energy markets, unlike financial markets and other goods and services, are more generally characterized by substantial government intervention. The energy sector is dominated by companies that either had or still do have substantial support from national governments. Beyond the formal state-owned sector, private energy companies have always been under scrutiny and or control by government given the importance of providing reliable supplies of 'essential services' and energy security to populations within borders. This aim of governments has meant that domestic energy policy impacts on foreign policy in number of ways, including escalating fears regarding fuel resource nationalism in times of high and volatile oil prices.

The broader context of the oil sector is that state-owned enterprises have made up a substantial sector of the market, competing and even over-shadowing "big oil" (the private multinationals), which now must be re-styled as "big energy". State-owned enterprises control approximately a third of global oil and gas reserves and almost the same proportion of current production capacity.[1] The energy market is widely seen as beyond the reach of international cooperative measures.

The Executive Director of the International Energy Agency (IEA) noted that "private, international oil companies find it difficult to develop reserves. Partnerships of state-controlled and private oil companies are needed, but the way to cooperate hasn't been invented."[2] Jimmy Carter, who as U.S. president during the oil shocks of the late 1970s passed the most sweeping energy legislation in the country's history, says in an interview that energy insecurity is "still a major issue and will be increasingly a crisis situation in the years to come". The present situation differs from the one he tackled in one main respect: "Today we are experiencing on a global basis competition from China and India that I didn't know when I was president."[3] Without articulating it as this paper does, Carter is saying that the competition is coming from the state-owned sector.

This paper provides policy recommendations and assesses the impact of anti-competitive practices in the energy sector on the international economy and energy security.[4] The debate is sometimes dichotomised and contextualised between state-owned national energy companies and private energy companies that enjoy 'national' protection. The paper seeks to find the missing common ground between the state-owned and private sector companies. The paper provides action points to improve competitive practices in the international energy sector, in a way that will promote energy security.

Thus it builds on the goal of the EastWest Institute to establish a comprehensive set of global regimes that together optimize energy security management at global, regional, national, and local levels. See Box 1 for an overview of this approach.[5]

1 Carola Hoyos, "Power shifts in global oil business", *Los Angeles Times*, March 19, 2007, C-4.

2 Shigeru Sato and Angela Macdonald Smith, "APEC to study impact of state-owned oil firms", Bloomberg News, carried in *International Herald Tribune*, May 29, 2007, http://www.iht.com/articles/2007/05/29/business/sxapec.php.

3 *Financial Times*, March 11, 2007, http://www.ft.com/cms/s/2/471ae1b8-d001-11db-94cb-000b5df10621.html.

4 For an excellent discussion of the current state of play in efforts to address non-tariff barriers to trade, see Anu Bradford, "International Antitrust Negotiations and the False Hope of the WTO", *Harvard International Law Journal*, Vol. 48, No. 2, Summer 2007, 383-439. The article "seeks to fill the gap in the current debate by analyzing the strategic interactions underlying states' attempts to seek convergence of their antitrust laws. Understanding why attempts to generate formal international antitrust cooperation have thus far been unsuccessful is a critical prerequisite for designing a normatively desirable international antitrust regime."

5 EWI publications in this area include: Danila Bochkarev and Greg Austin, "Energy Sovereignty and Security, Restoring Confidence in a Cooperative International System", EastWest Institute Brussels, New York, Moscow, 2007; Danila Bochkarev, "Nuclear Fuel Banks: Moscow, Washington to Lead on Mergers", EastWest Institute, Brussels, New York, Moscow, 2008; Angelica Austin, Danila Bochkarev, and Willem van der Geest, "Energy Interests and Alliances: China, America and Africa", EastWest Institute, Brussels, New York, Moscow, 2008; Greg Austin and Marie-Ange Schellekens-Gaiffe (eds.), *Energy and Conflict Prevention*, Madariaga European Foundation, EastWest Institute, The Bank of Sweden Tercentenary Foundation, Brussels, 2007.

Box 1: Excerpts from *Energy Sovereignty and Security

"There is growing misunderstanding of strategic trends in the energy policy of key hydrocarbon exporters. This is based on failure to recognize the emergence of greater competition at a systemic level. There are two different modernization and 'mineral-wealth' management models that are now more visibly competing with one another. On the one hand, the 'Western model' of modernization aims at removing 'political barriers that limit access to raw materials, to oil and gas resources and to attractive new markets…[and] foreign direct investments are seen as the best tool to denationalize oil and gas'. On the other hand, a number of emerging economies have 'formulated their own set of references for globalization': they want to participate in 'the international economy, but on the condition that the state's long-term political, strategic, and economic national interests are served'. Contrary to standard IMF expectations, some of these countries have managed to combine the efficiency of private management with state control of energy assets.

Thus, several energy-producing countries still see their energy resources and infrastructure as one of the key pillars of statehood and, in many cases, as a means of rising to a position of global strategic significance. By successfully applying a new set of socio-economic principles, now labeled the 'Beijing consensus', some of these countries feel that they have proved the viability of a development model other than the IMF-advocated 'Washington consensus'.

Current trends differ significantly from the 'Arab boycott' of the mid-1970s. Now, energy exporters do not seek to exercise pure political pressure on the West. They tighten control over their energy resources in order to get a bigger part of 'energy cake'. In these circumstances, the concept of energy, and in particularly of energy security, should be depoliticized and re-defined in order to stabilize energy markets, secure stable and reliable energy supplies and develop new more efficient and environment-friendly technologies, thus restoring confidence in an international energy system. National security policy emphasizing coercive military power cannot deliver energy security. Leaders in business and global civil society should prevent politicians from going down the 'blind alley' of threat scenarios and coercive response when addressing energy security.

The time is now right for a new effort by states to restore confidence in an international cooperative energy system. The most powerful states, represented by G8 members plus China, India, Brazil and key producer states – while working closely with the private sector and civil society – should take the lead to develop mutually beneficial international energy strategies, to deepen integration between energy producing and consuming states and to re-build confidence in international energy markets on basis of the cooperative approaches."

* EastWest Institute, *Energy Sovereignty and Security: Restoring Confidence in a Cooperative International System* (January 2007)

One question this paper confronts is the assertion that the "rising influence of NOCs still presents important long term challenges to US geopolitical goals, American economic power, and the efficacy of international standards concerning basic human rights, good corporate governance, and global investment & fair trading practices."[6] It seems that NOCs are in this view the source of quite a few evils, even if the authors do concede that the NOCs do not "imminently" threaten U.S. national security.

6 Matthew E. Chen and Amy Myers Jaffe, "Energy security meeting the growing challenge of national oil companies", *The Whitehead Journal of Diplomacy and International Relations*, Vol. 7, Number 2, Summer-Fall 2007, p. 14.

Oil Market Transition Towards Stability

There have been a number of shifts in oil industry fundamentals over the past decade. These include both changes in the physical and risk hedging derivatives markets. There has been a substantial increase in downstream supply shocks, particularly, due to refining capacity constraints as a result of Hurricane Katrina and number of force majeure events. Transport costs have also increased, reflecting the overall rise in the cost of raw materials to build tankers and pipelines as well as the price of diesel. On the demand side the market is consistently underestimating demand-side growth causing an unexpected overshooting effect in oil prices to signal a need for increased investment.

The changes in industry fundamentals and in broader macro-economic policy indicate the increased probability of oil price spikes. It is difficult to assess if the market will resolve itself any time soon, at least in the short-term to a new equilibrium given the traditional lag in capital investment. Proposed alternatives, such as bio-fuels, have also become costly at the same time prices at the gasoline pump have risen.

The increased variability in prices has also had implications for capital investment in downstream capacity. Given the substantial capital investment needed in increasing both refining and production capacity, the increased volatility has increased the threshold and hurdle rates for planned projects. The volatility in oil prices can also be explained by the increasing proportion of traded on spot markets as opposed to long term forward contracts as the there has been a substantial rise in proportion of oil produced from non-OPEC sources.

Price overshooting in the physical oil market is due in part to consistent underestimation of demand side growth and the increase in spot trades in the physical oil market. The increase in spot trades is due to the high level of non-OPEC production, which has been able to keep up with demand side growth. Due to the increased volatility in the physical market there has been an increase in the volatility of futures markets due to hedging against the increased risk of both supply and demand side shocks.

Two other factors have also added upward pressure on global oil markets: (a) broader macroeconomic policies to curb economic growth in light of increased fears regarding inflation; and (b) the re-pricing of risk in global debt/capital markets due to the subprime crisis. The decline of the purchasing power of the US dollar, one of the main currencies in which oil prices are denominated, has also led to an increase the number of dollars need to buy a barrel of oil. The exchange rate volatility could also explain some of the increase in the volume of oil futures traded. However, other financial derivatives are utilised to hedge against exchange rate risk. These factors have also led to an increase in speculation in oil markets, just as a number of other commodities markets have been coming to terms with fundamental shifts and substantial increases in global demand during an unprecedented expansion of the global economy.

There are several characteristics worth noting. The first is the persistence of divisions or apparent divergences of interest between the international energy companies and resource rich countries over access to exploitation of energy reserves. At the same time, many technology-rich countries also deny resource-rich but technology-poor countries easy access to the most modern production advances. Then there is the division between producer countries and the consumer countries over marketing and price. There is also rising international concern that the producer countries (and their state-owned companies) do not have the fiscal strategies in place that allow accumulation of investment capital for longer-term development of new fields.[7]

Power Shift to State-Owned

Internationally, the Red Line[8] and Achnacarry[9] Agreements of 1928 allowed the major oil companies – Exxon, Mobil, Socal, Gulf and Texaco, Royal Dutch Shell, British Petroleum and CFP not only to plan investment in reserves located in the Middle East, by allocating production shares to the various territories in which they had concessions, but also to control the market from the point of view of prices. As late as 1972, these seven companies, of which five were American, controlled 91 per cent of Middle East output and 77 per cent of the non-communist world's oil supply outside the United States. In this respect, US companies controlled the vast bulk of the supply of oil to the key allies of the United States.

According to the *Financial Times,* the "new seven sisters", the "most influential energy companies from countries outside the Organisation for Economic Co-operation and Development", are Saudi Aramco, Russia's Gazprom, CNPC of China, NIOC of Iran, Venezuela's PDVSA, Brazil's Petrobras and Petronas of Malaysia.[10] Figure 1, which was published in the *Financial Times,* offers an analysis of some of the most important characteristics of the leading NOCs.

Almost four decades later, "big oil" has been pushed into the role of competitor with state-owned companies. As part of this power shift, there is a contest about framing the rules for competition and regulation in the international energy system. Saudi Aramco and Exxon Mobil remain entrenched at the top of the 100 leading oil companies (based on a composite set of indicators).

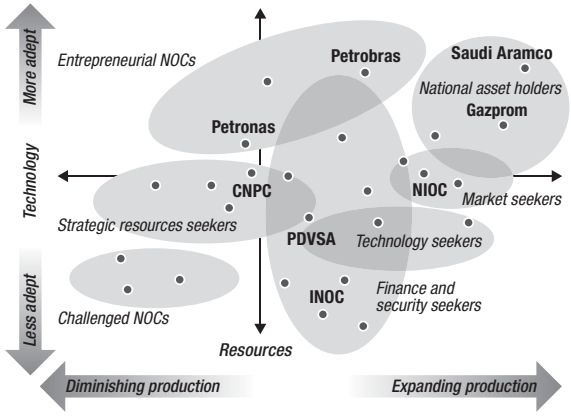
7 See for example the analysis in "The Global Energy Market: Comprehenslve Strategies to Meet Geopolitical and Financial Risks—the G8, Energy Security, and Global Climate Issues", Baker Institute Policy Report, No. 37, July 2008, http://www.rice.edu/energy/publications/PolicyReports/BIPP_37_July08_GEM.pdf.

8 For further detail, see http://www.state.gov/r/pa/ho/time/id/88104.htm.

9 For further detail, see http://www.mtholyoke.edu/acad/intrel/energy/achnacarry.htm. According to one source, the agreement "set out working principles to avoid competition at the marketing end of the oil industry. The agreement specifically excluded the US market because of its powerful anti-trust legislation, but there is no question that the companies had no intention of serious competition there if they could hammer out an agreement for the rest of the world." See Richard Cowen's academic writings for the University of California at Davis, http://www-geology.ucdavis.edu/~cowen/~GEL115/115CH13oil.html.

10 *Financial Times*, March 11, 2007, http://www.ft.com/cms/s/2/471ae1b8-d001-11db-94cb-000b5df10621.html.

Figure 1: Who are the national oil companies?[11]



Source: PFC energy

Figure 2: Top 10 oil companies share of upstream capex investment 2006[12]

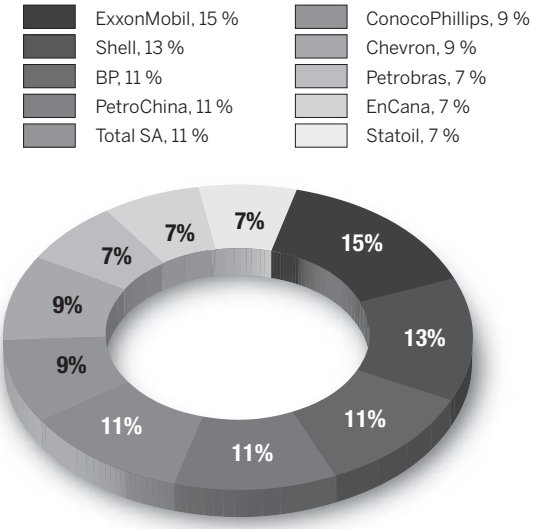


Figure 3: World petroleum liquids production '000 barrels per day[13]

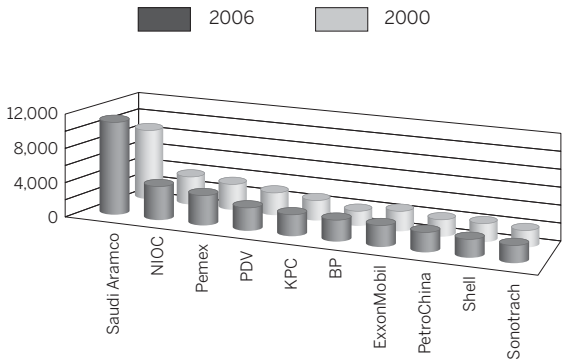
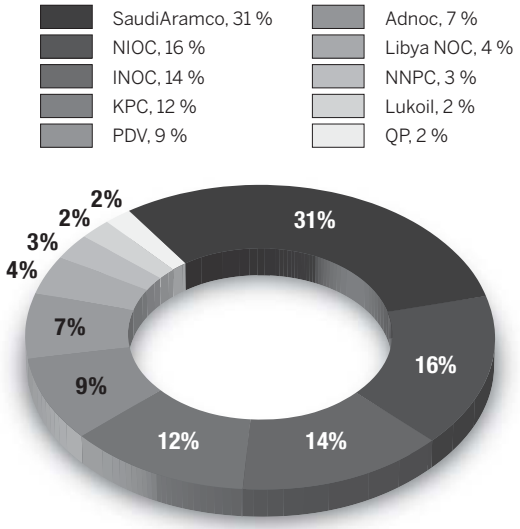


Figure 4: Top 10 companies reported reserves 2006[14]



Exxon is top in terms of capital investment, while Saudi Aramco is top in terms of reserves and production. *Figure 2* above shows the top 10 oil companies' share of capital investment in 2006 (approximately US$94.5 billion).

Figure 3 shows world petroleum liquids production per day in 2006 compared with 2000. Saudi production far outweighs the other national owned oil companies, and is almost three times that of the second-ranked National Iranian Oil Company (NIOC). But Saudi Aramco is hardly a newcomer to the oil industry. The long-standing relationship between U.S. private sector oil interests and the 100 per cent Saudi-owned company is multi-faceted and complex. Saudi Aramco's dominant position in the global oil market sets the stage for fears about the nationalistic element in the debate about NOCs.

Volatile oil prices continue to stimulate resource nationalism among the traditional the 100 per cent Saudi-owned national oil companies. But according to Energy Intelligence Research, the more dramatic gains have fallen to hybrid, partly state-owned firms from emerging economies including Russia, China and India. *Figure 4* above shows the importance of state owned oil companies and their influence over global oil reserves. There is additional data on state-owned companies in Appendix 2.[15]

11 *Energy Intelligence Research*, "The Energy Intelligence Top 100: Ranking the World's Oil Companies," 2007 edition.

12 *Ibid.*

13 *Ibid.*

14 *Energy Intelligence Research*, "The Energy Intelligence Top 100: Ranking the World's Oil Companies," 2007 and 2001 editions.

15 Appendix 2 (Table 1) shows the importance of oil and gas revenues to government, as a percentage of oil and gas revenues and world rankings by reserves in 2003. Table 2 in the Appendix shows the level of privatisation of former 100 per cent state owned oil companies.

State-Owned: National or Multinational

Earlier, the paper identified concerns about the performance of state-owned energy companies, in terms of:

- Possible competitive advantages as a result of state-ownership;
- Possible restrictions on international energy companies' access to reserves;
- Some restrictions on lack of access to the most advanced technology;
- Lack of capital accumulation adequate for investment in long term exploration and development of new fields; and
- Divergent interests between state-owned companies and market mechanisms.

The public commentary on state-owned energy companies has intensified as a result of the rising competition with private sector companies, the volatility of the oil market and the long-term trend towards even more market power for state-owned energy companies. The policy environment has been heavily influenced by this over-excited public mood. Detailed analyses against a wide variety of performance criteria can be found in several foundation studies.[16]

A 2008 study by KPMG analyzed the performance of state-owned companies against several criteria under two heads: Operational (reserve replacement ratio and production growth) and Financial (market value, revenues, return on invested capital, profit and assets).[17] Tables 1 and 2 show that companies from Brazil, Malaysia, China and Angola are top performers, with Brazil and Angola "among the fastest-growing oil producers in the world".

Table 1: NOC Financial Performance[18] (2006 data)

Ranked Companies (US$ billions)	Revenue	Net Profit	Net Assets
PetroChina	86	19	77
Petrobras	73	13	48
Statoil	66	6	20
Petronas	51	14	55
Gazprom	79	23	127
KPC	75	6	35

Table 2: NOC Operational Performance[19] (2005 data)

	Production		Reserves		
	Oil and condensate (mnb/d)	Natural gas (mnboe/d)	Oil and condensate (bn bbls)	Natural gas (bn boe)	Reserves replacement Ratio %
TIGERS					
Petrobras	1.9	0.4	12.3	2.7	174
Petronas	0.9	1.2	7.6	18.3	166
PetroChina	2.3	0.7	11.6	9.9	104
Statoil[20]	1.1		4.2		94
Sonangol[21]	1.4		8.0		N/a
TITANS					
Saudi Aramco	8.9		259.9	44.7	104
Gazprom	0.9	9.6	19.0	187.8	N/a
NIOC	3.8		136.0	177.2	N/a
Iraqi NOC	2.0		115.0	20.2	N/a
KPC	2.6		101.0		N/a

Existing research shows how diverse state-owned companies can be. On the following two pages we provide the profiles of four state-owned companies: NIOC, PetroChina, Saudi Aramco, and Gazprom from the KPMG study.

16 Recent studies which capture the main elements of the debate include: Chen and Jaffe, op. cit; Robert Pirog, "The Role of National Oil Companies in the International Oil Market", Congressional Research Service, Report to Congress, August 21, 2007; and Keun-Wook Paik, Valerie Marcel, Glada Lahn, John V. Mitchell and Erkin Adylov, "Trends In Asian NOC Investment Abroad", Royal Institute of International Affairs, Working Background Paper, London, March 2007, http://www.chathamhouse.org.uk/files/6427_r0307anoc.pdf; and The World Bank, Oil, Gas, and Mining Policy Division Study on NOCs and Value Creation. ESW Concept Note Project Nr. PI09169, http://www.docstoc.com/docs/997406/Study-on-National-Oil-Companies-and-Value-Creation. See also World Bank and the Center for Energy Economics, *A Citizen's Guide to National Oil Companies, Part A, Technical Report*, October 2008, pp. 64-65. http://siteresources.worldbank.org/INTOGMC/Resources/NOC_Guide_A_Technical_Report.pdf.

17 KPMG International, "Key Issues for Rising National Oil Companies", Switzerland, June 2008. http://www.kpmg.com/SiteCollectionDocuments/Keyissuesfor_rising_nationaloil.pdf.

18 KPMG, "Key issues for Rising National Oil Companies", 2008. The KPMG Report concludes: "Angola's crude oil production has more than quadrupled over the past two decades, with production averaging 1.4 mnb/d in 2006. Production is set to reach 2 mnb/d in 2008 with further deep-water production coming online. Petrobras' exploration success rate in Brazil was 42 percent in 2006. While Pemex and PDVSA's domestic outputs have been stagnant or falling, Petrobras approximately doubled its production and reserves between 1996 and 2006."

19 KPMG, "Key issues for Rising National Oil Companies", 2008. Sources for the table compiled by KPMG vary and include information from 2005 and 2006, so the data in each cell may not be exactly comparable. See p. 24.

20 Statoil provides combined data for oil and gas.

21 According to the KPMG study, the data for Sonangol did not allow comparisons.

State-Owned Companies*

Saudi Aramco

Saudi Aramco is the biggest of the Titans. It is the largest oil producer and exporter in the world. Its critical role on international oil markets is expected to grow further as it currently produces 13 percent of global oil but holds 22 percent of proved oil reserves. It will also be a Titan of tomorrow because of its demonstrated skills as an operator and a swing supplier to world markets.

Saudi Aramco defies preconceptions of many state companies as lacking technological capability and independence from government. The company seeks to be the best, to surpass other NOCs; it gives a special emphasis to professionalism and technology. It was created through nationalization like many other NOCs, though the gradual acquisition of assets was a smooth process in which the original company's experience and organization were largely retained – thanks to technical and marketing agreements with the foreign consortium members lasting until the late-1980s. Since then, the political leadership was careful to give Saudi Aramco the operational autonomy and means to accomplish its mission successfully.

Part of its mission is its multifaceted commitment to the development of the Kingdom's economy. In support of government policy on diversification, Saudi Aramco leverages activities in the hydrocarbons sector to promote manufacturing and employment in the Kingdom, notably through its integrated petrochemical and refining complexes and provision of gas to domestic industry and utilities. It also strives to enhance private sector capacity by using local businesses in the oil and gas equipment and services sectors for its operations.

The consuming world is expecting Saudi Arabia to provide a large share of future oil needs. Saudi Aramco has given indications of being able and willing to increase its production in response to rises in world demand for oil. But Saudi policy makers and oil professionals are also concerned with demand uncertainty and maintaining the Kingdom's long-standing policy of a maximum depletion of 2-3 percent of the remaining reserves (current depletion rates are well below this maximum). In the spring of 2008, they indicated that they are aiming for a sustained capacity of 12.5 mnb/d, and not the hoped for 15 mnb/d. Over the long term, of course, depleted reserves will not be replaced indefinitely and production will inevitably reach a plateau, which Saudi Aramco will endeavor to maintain for as long as possible. One of the key questions in this respect is what recovery rates will Saudi Aramco achieve? At a recent conference, a senior Saudi Aramco executive announced that they would add 100 billion barrels of recoverable reserves by improving their recovery techniques, thus boosting recovery from 51 percent to 70 percent.

Gazprom

Gazprom is the world's largest gas company and holds the largest share of gas reserves. According to market capitalization, Gazprom is among the five largest energy companies in the world. It produces nearly 90 percent of Russia's vast gas resources and operates the gas pipeline network. As fixed by law, Gazprom has a monopoly over gas exports. More broadly, Gazprom has benefited from opportunities created by the government's drive to increase national control over the energy sector.

The company's strategy also highlights new ambitions that are taking the gas giant outside Russia's borders. It is already a strategic supplier of pipeline gas to Europe and now seeks to become a major LNG supplier to North America and Asia. It is represented in over 30 countries – largely in marketing, but increasingly in E&P as well (Libya, India, Vietnam, Iran, for instance). In its public statements, the company announced it seeks to increase its authority and influence in the world community.

Its diversification strategy focuses on expanding its LNG exports, developing its oil business and establishing a competitive presence in the power generation industry. The acquisition of Sibneft allowed the company to take on a significant position in the Russian oil industry, which is fragmented despite Rosneft's emergence as the national champion. Internationally, Gazprom is targeting an expansion of oil and gas activities throughout the supply chain, with an emphasis on the mid and downstream, through competitive bidding and asset swap deals.

Looking at challenges facing Gazprom in the coming decade, the company is required by Russian law to supply gas at regulated prices for heat and power in Russia's domestic market. Low prices have constrained Gazprom's available capital for reinvestment in the sector and has reduced efficiency incentives internally. However, in November 2006 the Russian government decided to incrementally increase domestic prices towards market levels. Ageing fields and insufficient export pipelines are also a concern going forward. The "Big Three", Gazprom's largest fields, accounting for more than 70 percent of its production, are now in decline. Gazprom will need to invest to offset this decline, develop new reserves and secure more reliable export routes to meet its long-term target of increasing European sales. To this end, Gazprom has put in place a reserve replacement program, which includes the start-up of new fields and associated infrastructure development necessary to meet domestic and export market commitments through to 2030.

NIOC

The National Iranian Oil Company was set up in 1948 in the midst of the turbulent politics in Iran, including foreign attempts to control the industry and government. This history has shaped Iran's oil industry, and in particular, its attitudes to foreign involvement in the sector. NIOC today is a company deeply intertwined with the Ministry of Petroleum, both organizationally and financially.

NIOC reached a record daily output of 4.2 mnb/d in March 2007 (against an average 3.9 mnb/d of crude in 2006). It plans to increase oil production to 5 mnb/d by 2010. It has the reserves to support this expansion, boasting the second largest conventional oil reserves in the world. Challenges for NIOC include the reticence of foreign companies to invest in a context of geopolitical uncertainty and US/UN sanctions, government interference in the company's operations, limited access to the capital generated from petroleum exports, the geological difficulty of developing new reserves and the decline of mature oil fields. Iran's mature fields face a rate of natural decline estimated at 8 percent onshore and 10 percent offshore, which require substantial investments in enhanced oil recovery. Iran's improved buyback contracts have succeeded in attracting some investors to develop its resources. In terms of financial constraints, gasoline subsidies siphon a large chunk of Iran's oil revenues every year – the IMF has estimated their cost at 12 percent of Iran's GDP. They have created a particular problem for NIOC by stimulating unsustainable domestic consumption, which it can only meet by importing gasoline at market prices. A recent rationing policy helped to restrain consumption, but there are no indications that the political will is there to remove the subsidies.

Iran has large ambitions in terms of gas. In its 20-year plan, the Iranian government presented a strategy for Iran to become the world's third largest gas producer (taking up 8-10 percent of the global gas business) by 2024. In view of Iran's proved reserves and prospectivity potential, its gas production can rise to meet domestic demand, oil field injection needs and some export. Gas buyers abound, as Iran's neighbors In the Persian Gulf face supply shortfalls. However, projects have been stalled by pricing disputes, as many buyers are unwilling to pay the price for importing gas from Iran. Other obstacles may stall export plans, which are similar to those faced by its oil industry.

PetroChina and CNPC

PetroChina was established as a joint stock company in 1999 as part of the restructuring of CNPC. According to the annual report, CNPC injected into PetroChina most of its high quality assets relating to its E&P business, refining and marketing, chemicals and natural gas businesses. The intention of the restructuring and IPOs was to make these state-owned firms more like vertically-integrated IOCs elsewhere. In connection with this process, the company has been spinning off or eliminating many unprofitable ancillary activities.

PetroChina is CNPC's largest listed subsidiary. An IPO of a minority stake of 13.71 percent was carried out on both the Hong Kong and New York stock exchanges in April 2000. In its debut on the Shanghai Stock Exchange in November 2007, PetroChina's market valuation exceeded US$1 trillion, the highest ever recorded. During five months, it dethroned ExxonMobil as the most valuable company in the world, but slipped to the second rank in March 2008, as its shares slumped 58 percent since the listing. Its revenues for the first half of 2007 were less than a third of that of ExxonMobil. PetroChina suffers losses in its refinery business because of government-imposed price caps and upstream earnings are affected by the government's windfall tax. Competition for new reserves has pushed up costs – and risks – for PetroChina. At the end of 2006 the lifting cost for oil and gas operations was US$6.74 per barrel, an increase of 27.7 percent from the preceding year. The increase in costs was due in large part to the group turning to reserves more difficult to explore and taking on riskier operations. PetroChina uses advanced EOR technology in some major ageing domestic fields to battle natural decline. At its largest field, Daqing, where production is falling by 40,000 b/d, the watercut nears 90 percent.38 In addition, rises in the cost of raw materials, such as steel, and the tight supply of oil services also increased operating costs. The company has also moved to tap what it calls the useless reserves, which require more costly advanced technology for exploration. Analysts nonetheless forecast strong profit growth and the Platts Top 250 companies ranked PetroChina as sixth in recognition of outstanding financial performance.

The strategy of CNPC and PetroChina, and their sister companies, CNOOC and Sinopec, has been to develop new reserves where possible and to invest in pipeline routes to export oil to China (most notably from Russia and Central Asia). CNPC has 69 projects in 26 countries with greater importance attached to Africa and Russia-Central Asia for CNPC's future equity oil mix.

* Excerpts from KPMG International, "Key Issues for Rising National Oil Companies", 2008, reprinted with permission.

The most comprehensive study to date appears to be the joint World Bank/CEE analysis.[22] It is exhaustive on the key issues, and some of the results are laid out in quantitative form in Table 2 of Appendix 2:

- Corporate governance;
- Public sector governance;
- Commercialization;
- Fiscal regimes (availability of external financing);
- Resource endowment;
- Oil dependency (revenues relative to GDP);
- Local contribution (tax revenues back to government); and
- Sector and trade openness.

The study's preliminary findings are perhaps a little surprising: two Russian companies (Gazprom and Rosneft) and a Chinese company (CNOOC) are in the top five performers across these criteria, alongside Gaz de France (the leading company) and Statoil of Norway. This result would appear to confound much of the American and European criticism of Russian Chinese energy companies.

As Chen and Jaffe note, the national oil companies (NOCs) see themselves as commercial businesses, "indistinguishable from private investors".[23] Of course, the reality is more nuanced than that, as the authors note. "Many NOCs ultimately serve the geopolitical interests of the main shareholder – the home government." They report that "several oil and gas producing countries, through the actions of their national oil companies, have exercised their market power to the detriment of the United States and its allies".[24]

Chen and Jaffe identify three areas of concern regarding global energy security:

- NOCs are "investing and operating in some of the world's most troubled regimes" which are hostile to "democratic, free-market values";
- there are doubts that the NOCs that will dominate future markets will be able to "bring on line new oil in a timely manner and in the volumes that will be needed" and this poses a concern about energy security; and
- There is a growing perception fuelled by big oil that NOCs have an 'unfair' (anticompetitive) advantage over IOCs because of the diplomatic and financial support the state-owned companies get from their home governments. [25]

They go on to note that investment by NOCs in Iran have provided the necessary finds for Iran's civil nuclear program, widely regarded as a precursor to a nuclear weapons capability. [26]

They make the following recommendations for the United States:

- set a new policy framework for dealing with the "challenges posed by national oil companies' geopolitical influence and economic power"
- "cooperate with NOCs and their governments" while lobbying for global trade rules that constrain the freedom of movement of NOCs;
- promote best practices for NOCs through mechanisms like the World Trade Organization, the Energy Charter, and the North American Free Trade Agreement;
- work for results-oriented consultations convened by the UN, or the International Energy Agency;
- press governments to ensure that their NOCs become better corporate citizens; and
- broad-based domestic efforts to reduce oil intensities of developed economies "not only to limit the monopoly power of any imaginable alliance of NOCs, but also to ensure that any shortfall of oil that may result from ineffective NOC investment in resources can be countered by supplementary alternative energy supplies".[27]

A study by the Congressional Research Service had a similar concentration on U.S. national interest and the presumption that NOCs were cross subsidising offshore activities through their domestically protected markets. A number of action points were cited in the paper but the major aim of US government intervention would be "to mitigate the potential challenge posed by the dominance of national oil companies". Like Chen and Jaffe, it called for demand-side management in the domestic market by the United States to reduce dependence on imports. It also called for pressure from the United States on other governments to have their NOCs pursue "commercial practices to maximize revenue flows" and to promote "recognized commercial practices".[28]

By contrast, a study outlined for work by the World Bank notes the commercial disadvantages that NOCs can suffer in serving as the "instrument for achieving a broad range of national, social and political objectives that go well beyond their original purpose of maximizing revenues".[29] These include additional costs for non-

22 "A Citizen's Guide to National Oil Companies, Part A".

23 Ibid. p. 13.

24 Ibid. p. 17.

25 Chen and Jaffe, op. cit pp. 12-13.

26 Ibid. p.14.

27 Ibid. pp. 18-20.

28 Pirog, op. cit.

commercial activities, reduced incentives to maximize profits, and constrained capacity to raise capital in international markets (which then imposes additional burdens in the national government's treasury as they need to compensate for "inefficient capital allocation"). But the report warns that such conclusions "cannot be generalized". The study calls for better "understanding of the political, social, and developmental consequences of the growing importance of NOCs" because of the "high risk and capital intensive nature of the hydrocarbon sector".

The Chatham House Study of Asian NOCs (ANOCs) makes quite plain the dangers of over-generalizing: "the Asian companies differ in character and scale".[30] It concludes that "In world terms, the scale of the Asian activities is modest, even in relation to the rapidly growing Asian oil import requirements". From 1995 to 2006, Chinese companies invested in overseas upstream projects at approximately the same total value as the major US companies invested in foreign upstream activities in 2004.

The analysis suggests that, "in the next five years, foreign equity production from all the ANOCs, 3 per cent of today's world production." It goes on to say that ANOCs' share of home country imports might be higher – at around 8–15 per cent in the cases of India and China. The study noted a regional concentration of ANOC production in the near term – Angola, Nigeria, Kazakhstan and Iran – even though there is a wider geographic spread at lower levels of intensity.

More recently a number of energy projects have been put on the shelf due to the growing cost of finance caused in part by the growing wedge between the pricing of risk by the market and the risk free rate.[31] The study made useful and detailed characterizations of differences between state-owned companies.[32] For example, it saw the "main driver" of the operations of China National Offshore Oil Company (CNOOC) as similar to that of a private sector firm. Yet by late 2008, the picture of NOCs as economic performers was still far from clear. The World Bank concluded:

- "NOCs exhibit a lower labor and capital efficiency, generate lower revenue, are less profitable, and produce a significantly lower annual percentage of their upstream reserves, than privately owned oil companies;
- In the comparison of NOCs to privately owned oil companies, researchers have attempted to control for 'non-commercial' factors. Because non-commercial factors are difficult to measure, researchers often use proxy measures, such as the relative percentage of state ownership, or the OPEC or WTO membership of the shareholder; and
- The results to date, although indicative of a general tendency, shed little light on the interaction between an NOC and its shareholder, or on the effectiveness of state participation in achieving the objective of the state's hydrocarbon and macro-fiscal policy."[33]

Energy and the Doha Round

The debate about the impacts of the state-owned and private sectors on global energy security has also become more important with the emergence of efforts in the Doha round to entrench it in the framework of the World Trade Organization. These moves are highly controversial for the private sector in WTO member states while some of the world's important energy actors, with state-owned energy companies, are not yet WTO members (such as Russia, Iran, Kazakhstan, Iraq, Algeria and Libya).

WTO Director-General Pascal Lamy told the 20th World Energy Congress in 2007 that "more predictable and transparent trade rules could benefit both energy-importing and energy-exporting countries, and, beyond them, companies engaged in energy trade and consumers — all of us".[34] He said that "Market forces can play a key role in the optimal allocation of scarce resources and in promoting technological improvements. Fairer rules of the game may contribute to countering temptations towards energy nationalism and preventing eruption of conflicts."

29 The World Bank, Oil, Gas, and Mining Policy Division, "Study on NOCs and Value Creation". ESW Concept Note Project Nr. PI09169, http://www.docstoc.com/docs/997406/Study-on-National-Oil-Companies-and-Value-Creation.

30 Paik et al, op. cit. pp. 4-5.

31 http://www.portengineering.info/reports-analisis/energy-analisis/how-is-the-global-crisis-hitting-the-energy-projects.html

32 For example, it noted: 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 focused on exploration opportunities and control of the marketing chain, while Chinese and Indian companies have shown their desire to acquire existing minor and midsize petroleum companies, with access to prime reserves, particularly in Russia and central Asia.

33 World Bank Group, "Overview of the Most Salient Advances in the Research on National Oil Companies", Washington DC, October 2008, http://siteresources.worldbank.org/INTOGMC/Resources/NOC_research_overview.pdf.

34 Rome, November 15, 2007. http://www.wto.org/english/news_e/sppl_e/sppl80_e.htm.

The types of rules that might be brought into play for the first time with respect to trade in energy goods:

- transparency: mandating governments to publish domestically all trade-related regulations and to notify relevant legislation to the WTO;
- prohibiting exports restrictions;
- prohibiting discrimination on the basis of origin or destination of products;
- freedom of transit;
- actions by state-trading enterprises;
- actions on trade-distorting subsidies;
- allowable exceptions if they "relate to the protection of exhaustible natural resources"; and
- security exceptions: "any action considered necessary to protect essential security interests, including action relating to fissionable materials".

Lamy observed the enormous difficulties faced by the international community in trying to bring energy goods and services within the ambit of the WTO. He described these as "certain specificities of the energy sector that make it different from other economic activities". He listed them:

- existence of natural monopolies, and the role of state-owned enterprises;
- physical characteristics of energy goods affect the way in which they are transported across borders and distributed to final consumers;
- existing WTO rules may not address appropriately all the needs of energy trade;
- lack of comprehensive international competition rules;
- government procurement disciplines apply only to a fraction of the WTO membership;
- WTO rules are based on a distinction between goods and services, but it is not always easy to categorize transactions as "goods" or "services" trade, in the energy sector;
- the nature of some energy products, such as electricity, is still not clearly defined.

In "The Other Oil War: Halliburton's Agenda at the WTO", Victor Menotti (2006) highlights the dilemmas facing state-owned and private sector companies in the light of high and volatile oil prices.[35] The United States, the EU and Saudi Arabia in 2006 invited developing countries to make concessions on access to energy resources and markets in returns for concessions in other areas, in particular for the United States and EU in the area of agricultural subsidies. He says that the richer countries are out to "dismantle state-owned oil companies" but warns that "expanded WTO rules could also restrain energy policymaking in the rich countries themselves, especially current priorities like reducing reliance on imported energy and/or shifting to sustainable sources".[36]

Extractive Industries Transparency Initiative

The Extractive Industries Transparency Initiative (EITI) aims to strengthen governance by improving transparency and accountability in the extractives sector.[37] The EITI sets a global standard for companies to publish what they pay and for governments to disclose what they receive. According to the EITI Business Guide, "an individual company may find it beneficial to participate in the EITI in order to demonstrate international credibility, deliver on business principles, and show industry leadership". It has long been accepted that eliminating corruption promotes prosperity, both for foreign investors and domestic stakeholders.

A number of governments and companies have committed themselves to implementing the EITI. For example, EITI announced in its Spring 2008 Newsletter that the government of Iraq has formally committed itself to the process.[38] No country has formally completed the compliance process. A number of companies have voluntarily acted in accordance with some transparency goals. For example, BP "reported how much it paid Azerbaijan in connection with construction of the Baku-Tiblisi-Ceyhan pipeline", and ConocoPhillips "reported its payments to East Timor".[39]

In May 2008, the United States Congress sought to remedy this with domestic legislation with far-reaching international effect. A bill introduced into the United States Congress, the Extractive Industries Transparency

35 Victor Menotti, "The Other Oil War: Halliburton's Agenda at the WTO", International Forum on Globalization, San Francisco, June 2006, http://www.ifg.org/reports/WTO-energy-services.htm.

36 For further analysis, see Sadeq Z.Bigdeli A Report on the Workshop on "The Role of the WTO in the Energy Security Debate", (Draft), 17 November 2006, http://64.233.183.104/search?q=cache:EQSD3nnbIA0J:www.nccr-trade.ch/images/stories/conferences/IP6/ReportontheWorkshop.doc+%22saudi+aramco%22+%22competition+%22commercial+practices%22&hl=en&ct=clnk&cd=3&gl=be&client=firefox-a.

37 http://eitransparency.org/.

38 See *EITI Newsletter*, Spring 2008, http://issuu.com/eiti/docs/newsletter_spring_2008?mode=embed&documentId=080524151818-f54450e906eb4c49b4a0576bd5f79844&layout=grey.

39 David Ivanovich, "Oil firms face tough disclosure rules: Congress wants to know how much companies pay foreign governments", *Houston Chronicle*, Dec. 14, 2008, http://www.chron.com/disp/story.mpl/hotstories/6163857.html.

Figure 5: Countries Implementing the EITI

Disclosure Act, would require *"oil, gas and mining companies to disclose what they pay to extract resources from other countries"*.[40] The draft bill notes that "there is a growing consensus among oil, gas, and mining companies that transparency is good for business since it improves the business climate in which they work and fosters good governance and accountability."[41]

According to one analysis, the Act would cover 27 of the top 30 global oil companies, since they have corporate roots of some sort in the United States, including through trading of their shares in New York.[42] Saudi Aramco would not be covered by the Act. To achieve greater transparency in energy markets greater global governance is required and institutional capacity building is a necessary requirement to achieve more competitive outcomes.

International Energy Tribunal (IET)

There is a need for increasing global governance in the energy sector, as it is effectively exempt from the WTO and a number of other significant global governance structures. The current global energy governance structures that include both the International Energy Agency (IEA) and the International Atomic Energy Agency (IAEA) have limited powers in terms of assessing disputes regarding access to technology and reserves in the industry.

An International Energy Tribunal (IET) could provide a mechanism to arbitrate disputes between competing interests in the global energy market. The tribunal could be framed in a similar manner to the anti-dumping procedures outlined under General Agreement on Tariffs and Trade (GATT) and administered by the World Trade Organization (WTO). The powers of the IET would be advisory only.

The IET could alternatively be established under the International Energy Agency (IEA) in order to bring together other countries outside the WTO and corporate stakeholders. The institutional settings would be designed not only to promote capacity building for dispute alleviation within the international energy system but also to build more cohesive relations among stakeholders. This would fill the need for an institution that sits between the IEA and those countries which are not members of it.

GATT dispute settlement procedures have been remarkably successful in promoting the principles of the treaty and in settling disputes in spite of the fact that

40 See http://www.house.gov/apps/list/press/financialsvcs_dem/press051908.shtml.

41 See http://www.house.gov/apps/list/press/financialsvcs_dem/frank_144_xml.pdf.

42 David Ivanovich, "Oil firms face tough disclosure rules: Congress wants to know how much companies pay foreign governments", *Houston Chronicle*, Dec. 14, 2008, http://www.chron.com/disp/story.mpl/hotstories/6163857.html.

there is no enforcement mechanism.[43] The proposed International Energy Tribunal would ultimately be considered a separate competition and access arbitrator in disputes regarding access and competition in energy markets. Continued market reform provides a solid basis for a new international energy tribunal given the harmonization of standards, licensing, and regulatory arrangements of the sector.

The provision of reliable energy supplies is a concern for both industrialized and emerging economies and the sector has undergone fundamental changes in the past two decades. The globalization of the energy sector has led to the increasing internationalization of both natural resource disputes and concerns regarding access to energy technology.

The Doha round has been considering intellectual property rights as well as the services sector. However, the round of global world trade talks has not provided an adequate basis for the inclusion of debates regarding the diffusion and uptake of new and emerging energy technologies. The failure of the review of the NPT in 2005 may have also limited the increase in use and uptake of nuclear energy technologies in the developing world.

Disputes regarding access to technology and reserves in the energy sector have increased due to:

- increasing globalization of traditional oil and the emerging "seven sisters" among state-owned oil companies (Gazprom, Saudi Aramco, Petronas, and CNOOC);
- the emergence of new technologies; and
- substantial regulatory and market reforms.

Disputes regarding the acquisition of assets in the energy sector are often assessed by the local competition authority, on the basis of anti-competitive detriment in most instances with the competition authority approving the asset sale to the off-shore companies. The last hurdle in the process of the acquisition of energy assets by off-shore companies that is rarely met is the vetting by government on the basis of national interest.

There have been two prominent cases where national interest affected in the acquisition of energy assets. The first was the proposed acquisition of UNOCAL by CNOOC that was effectively vetoed by congress in the United States (2001). The second was the acquisition of Woodside in Australia (2004), with the Australian Treasurer imposing strict conditions on the bid. In both instances, due to failing the national interest test, alternative bidders for the assets were approved.

Access to emerging energy technologies are also regulated on a nation state basis (or regionally as in the case of the EU) with patent rights and licensing arrangements. The NPT and bilateral agreements (India-US agreement on nuclear safeguards) regulate the diffusion of nuclear technology, globally. These arrangements provide protection, and on an economic basis can be justified to protect infant industries and in the case of nuclear energy provide a public good.

The development of new energy technologies in places such as Australia is often constrained due to patent and licensing requirements, as well as the lack of venture capital, given the risk premiums associated with the capital investment. This often leads to the commercialization of emerging energy technologies occurring off-shore in the United States and Europe.

Conclusions and Recommendations

As a result of consistent market failure in the energy sector there needs to be a global governance structure specifically aimed at regulating it to allow for more competition. This global corporate governance structure would primarily consist of multi-national private energy companies and state-owned energy companies and promote:

- Greater transparency in reporting by government owned enterprises in the energy sector, based perhaps on the adoption of the extractive industries transparency initiative.
- Introduction of domestic regulatory regimes to incorporate the idea of 'competitive neutrality' to provide greater competition between the oil majors and the new state-owned seven sisters.
- Energy market reform in the big sister state of origin countries to improve competition in domestic markets and allow for a more even 'playing field' to underpin new energy diplomacy between oil consuming and oil producing countries.

43 See Eric Reinhardt, "Adjudication without Enforcement in GATT Disputes," *Journal of Conflict Resolution*, Vol. 45 No. 2, April 2001 174-195. At p. 176, the author describes the dispute settlement process: "(1) a plaintiff state formally complains about another state's objectionable trade policy; (2) GATT encourages the parties to try to reach a bilateral solution; (3) if dissatisfied after consultations, the plaintiff can request the formation of an ad hoc GATT panel to make a legal ruling on the matter; and (4) if the dispute continues, the panel will issue its ruling. Of course, the plaintiff may choose to retaliate without GATT authorization at any stage in this process. Likewise, the defendant need not abide by any GATT ruling."

- Global accounting standards for energy companies that are owned by government in order to decrease cross-subsidies between domestic and off-shore activities.
- A new complaints mechanism (an International Energy Tribunal) to ensure that all stakeholder interests can be accounted for. This could be constructed along the lines of the anti-dumping provisions in the WTO or anti-trust procedures in terms of anti-competitive detriment.

If the latter was included then there would have to be a secondary complaint mechanism regarding national interest. This would allow for an examination of national interest claims, essentially testing such claims in the market.

The intergenerational component in terms of the overall cost benefit analysis should also be included as a criterion for determining the validity of the national interest complaint against an energy merger.

The complaints mechanism would enable companies to challenge the allocation of reserve rights. This would also be constructed under market access provisions. Acces to energy reserves and energy technology would be provided for in the same process as access to energy markets.

An International Energy Tribunal is needed to ensure energy security. Governments aim to provide the populations of their major economic centres reliable supplies of energy. This can be guaranteed only if the trans-border nature of the energy security problem is recognised as the foundation of energy diplomacy and appropriately institutionalised. Energy security, like security more broadly, is indivisible.

There is a need to provide practical solutions in meeting the growing energy needs of both the developed and developing world, particularly in light of global challenges such as climate change. Results-orientated consultations and cooperative initiatives are needed from multilateral institutions, governments, nongovernmental organizations, and research organizations. Multilateral support of the goals set out in the policy recommendations outlined above has already been given in forums such as the G8 and the G20 and in other intergovernmental discussions. All stakeholders in the energy sector have incentives to discuss and devise practical ways in which energy can be used as an effective catalyst for global cooperation and to enhance the reliability of energy supplies for future generations. It is time for policymakers to expand their conceptual horizons to see that the delivery of reliable and least cost energy (with some inclusion of externalities – environmental and social) is a key input into maintaining human safety not just an input into economic competiveness indicators.

Appendix 1: *World Bank Assessment of National Oil Companies*

Table 1: World Bank Assessment of National Oil Companies *

Company	Corporate Governance	Public Sector Governance	Private	Fiscal Regimes	Resource Endowment	Oil Dependency	Local Contribution	Sector & Trade Openness	Ave.
Average NOC	54	57	64	61	11	81	33	52	55
Top Performers – NOCs scoring above average and that provide substantial, audited reporting									
GDF	100	100	100	100	0	97	95	73	83
Rosneft	69	71	100	100	65	87	72	48	82
Gazprom	79	74	100	75	65	87	40	44	80
Sta+toilHydro	81	78	100	100	5	86	74	71	75
CNOOC	69	64	100	100	5	97	74	61	73
PETROBRAS	61	74	100	85	3	98	76	71	70
PetroChina	69	64	100	75	5	97	72	54	68
Sinopec	69	62	83	75	5	97	88	58	65
ECOPETROL	69	59	83	75	0	96	0	73	64
KPC	69	62	100	75	21	46	0	56	62
Mid-Tier – NOCs scoring above average, some with audited reporting									
PTT	88	71	100	100	0	83	97	83	74
Petronas	63	72	100	100	4	97	67	58	73
OGDCL	63	71	100	100	1	95	0	72	72
Sonatrach	66	71	100	100	7	55	60	33	67
ONGC	58	74	90	75	2	96	60	75	66
Saudi Aramco	59	66	67	100	58	46	0	34	66
Kazmunaigas	66	40	100	75	10	74	-63	28	61
QP	66	55	50	100	34	38	46	39	57
SOCAR	50	55	83	100	3	36	0	31	54
Pertamina	47	86	50	38	4	99	0	56	54
PEMEX	38	75	55	40	3	98	38	37	51
PetroBangla	53	52	66	38	1	96	61	67	51
PDVSA	53	33	67	50	22	75	55	36	50
PetroVietnam	34	52	67	50	1	97	54	57	50
ADNOC	38	38	50	25	25	58	0	36	39
Sub-Saharan – NOCs of great importance with common issues and challenges									
ENH	78	69	100	75	3	96	0	67	70
PETROSA	50	64	67	25	13	72	0	39	48
NNPC	44	71	50	25	0	95	0	63	47
Sudapet	38	24	0	50	1	83	0	34	33
SNPC	33	36	33	43	0	42	0	58	31
Sonangol	56	24	0	50	2	34	0	56	28
GNPC	31	24	0	25	0	86	0	67	28
GEPetrol	6	23	5	45	0	10	0	55	15

World Bank and the Center for Energy Economics, *A Citizen's Guide to National Oil Companies, Part A, Technical Report*, October 2008, pp. 64-65.
See http://siteresources.worldbank.org/INTOGMC/Resources/NOC_Guide_A_Technical_Report.pdf.

Appendix 2: *Additional Data on NOCs*

Table 1: The importance of oil and gas revenues to government as a percentage of selected values, and world rankings by reserves 2003

Company	Oil and gas % Export Revenue	Oil and gas % of Government revenue	Oil and Gas % of GDP	World Ranking by oil reserves
Saudi Aramco	90	70-80	40	1
NIOC Iran	80	40-50		2
INOC Iraq	87		80	3
KPC Kuwait		90	40-50	4
PdVSA Venezuela	80	50	30	5
Adnoc UAE	70		30	6
Libya NOC		75		7
NNPC Nigeria	96	80		8
Pemex Mexico	11	35	8	9
Qatar petroleum		70		11
Sonartrach Algeria	95	75	40	16
Petronas Malaysia	4	29		22
Pertamina Indonesia	21		7-19	26
Petroecuador	40	40	12	28
Socar Azerbaijan	85	50		33
Rosneft Russia	66		25	34
Sonaangal Angola	90			38
SPC Syria	67	50		39
EGPC Egypt				41
Ecopetrol Colombia	28	5	7	43
Kazmunigas Kazahkstan	60	55		35

Sources: PIW April 2005, World Bank Country Data at a glance, EIA Country profiles, Economist Intelligence Unit, EIA OPEC Revenues, country details, January 2005.

Table 2: Full or partial privatisations of national oil companies

Company	Date of privatisation	% of State ownership sold
YPF Argentina	1993, 1999	58, 100
YPBF Bolivia	1996	50
PetroCanada	1995,2002	81
Sinopec	1998	45
CNOOC China	1998	29
Elf France	1992,1994	49,100
Total France	1992,1998	30,100
ENI Italy	1998,2001	15,70
Yukos Russia*	1994	100
Statoil Norway	2001	20
Gazprom Russia	1994	61
Repsol Spain	1989-1997	80
BP UK	1979-1995	100
Petrobas Brazil	1995	49
Lokoil Russia	1994	92

Sources: Aegis Energy Advisors Corp, November 2002 and Petroleum Intelligence Weekly, April 2005
* Rosneft acquired Yukos unit representing about 60 per cent of its crude oil production in 2004.

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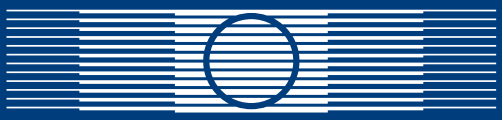

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EWI Brussels Center
Rue de la loi, 85
Brussels 1040
Belgium
32-2-743-4610

EWI Moscow Center
Sadovaya-Kudrinskaya st.
8-10-12, Building 1
Moscow 123001
Russia, 7-495-691-0449

EWI New York Center
700 Broadway
New York, NY 10003
U.S.A.
1-212-824-4100

www.ewi.info