Research Protocol

“Strategies and Influence of Emerging National Oil Companies on World Energy Markets”

Energy Forum of the James A. Baker III Institute
for Public Policy at Rice University
and
Petroleum Energy Center of Japan

Introduction

“Strategies and Influence of National Oil Companies on World Energy Markets” is a two year research study on the behavior and strategies of national oil companies and the overarching trends in their investment and trade patterns. The study will investigate the impact of the strategies, goals, and behaviors of national oil companies on international energy security and oil geopolitics. The study will emphasize how the United States, Japan and other major consuming countries, as well as the private sector, should deal with these increasingly powerful national companies in terms of trade, investment and strategic alliances.

Throughout the 1990s and into the next century, economic liberalization, market economy reforms and Western-style corporatization management reorganizations have characterized the oil and gas industries of major energy producing countries such as Russia, Norway, Canada and Malaysia, as well as the energy industries of major consuming countries in the developing world such as China, Brazil, Japan and India. These emerging hybrid firms, together with remaining traditional oil and gas state monopolies, control the vast majority of proven resources remaining for exploitation and development. The Western international oil majors now control less than 10% of the world’s oil and gas resource base.

Based on their huge holdings of oil and gas reserves and new strategic initiatives in international oil and gas trade and investment, national oil companies are rapidly strengthening their influence over world oil and gas markets to such an extent that no discussion on the future of the world energy outlook is meaningful without reference to their future goals, strategies, and behavior. The goals, strategies and behaviors of national oil companies have changed over time and understanding this transformation is important to understanding the future organization and operation of the energy industry. This study aims to establish an effective framework of analysis on the strategies and behavior of NOCs, allowing better forecasting of the impact NOC activities will have on the future supply, security and pricing of oil.
Ranked on the basis of oil and gas reserve holdings, 14 of the top 20 upstream oil and gas companies in the world are national oil companies or newly privatized national oil companies, according to the annual survey of Petroleum Intelligence Weekly (PIW). State monopolies represent the top 10 reserve holders internationally. By comparison, ExxonMobil and the Royal Dutch Shell Group are ranked 12th and 13th while BP and ChevronTexaco are ranked 16th and 19th respectively.

In terms of world oil production, however, only six of the top firms are national oil companies, while ExxonMobil, Royal Dutch Shell, BP and ChevronTexaco represent among the largest oil and gas producers worldwide. These Western majors also have also achieved a dramatically higher return on capital than national oil companies of similar size and operations. Of the top 20 oil and gas producers worldwide, 14 are national oil companies or newly privatized national oil companies, according to PIW. PIW’s ranking shows that Saudi Aramco, Gazprom, NIOC, Pemex, Sonatrach, INOC (Iraq), PetroChina, KPC, Petrobras, Petronas, Yukos, Lukoil, PDV (Venezuela) and NNPC are among the most important oil and gas companies in the world. PIW’s ranking on all measures ranks Saudi Aramco, PDV, NIOC, Pemex and PetroChina in the top 10 oil companies in the world.

The influence of national oil companies on the industry structure and pace of resource development has not been comprehensively studied and therefore is not well understood either by industry leaders or the energy policy community. These national oil companies are in the process of reevaluating and changing business strategies, with substantial consequences for international oil and gas markets. It is a time of great change inside the leadership of these national oil companies, and goals and priorities will be different than those of the Western international majors, with potentially serious consequences for market stability and oil geopolitics. The Western international majors are interested in strengthening ties with emerging national oil companies to diversify their operations and enhance supply security but strategic alliances have been difficult to form.

The gap between the high ranking of national oil companies’ resource holdings and the ranking of the world’s largest oil and gas production operating companies highlights a potential source of supply instability in world energy markets. The fate of emerging national oil companies, their strategies and policies, will have a substantial, long term impact on the pace of resource development in the coming years.

Asian and Russia national oil companies have increasingly begun to compete for strategic resources in the Middle East and Eurasia, in some cases knocking the Western majors out of important resource development plays. Firms such as India’s ONGC and IOC; China’s Sinopec, CNPC, and Malaysia’s Petronas have been successful in Africa and Iran, with eyes now on investments in Saudi Arabia, Kuwait and Iraq. Russia’s Lukoil is also becoming a major international player in key regions such as the Middle East and Caspian Basin. Wood Mackenzie Consultants notes that producing countries are getting more preferential financial arrangements from these firms who do not use rate of return criteria to guide their operations (see Energy Compass March 12, 2004 “Corporate Majors Under Threat”). Many of these emerging national oil companies are bankrolled or have operations subsidized by their
national governments, with geopolitical and strategic aims factored into investments rather than purely commercial considerations.

Strategic investment and trade alliances for emerging national oil companies are also being sought on the basis of geopolitics rather than economic considerations. CNPC, for example, is studying forming investment alliances with Petronas and continues to desire a strategic investment in a Russian oil company. Russia, on the other hand, has shown reluctance for its oil companies to connect with Western or Chinese firms but has announced interest in forming alliances with Saudi companies.

The interplay between emerging national oil companies, major oil producing countries and Western consumer countries will have a large impact on the question of energy security and stability of oil markets, raising many questions.

Analytical framework

The aim of the study, “Strategies and Influence of National Oil Companies on World Energy Markets,” is to gain better understanding of the sources of influence of individual national oil companies on international energy markets by studying the mechanisms of that influence, such as the NOC’s size and control of resources, financial performance, strategies and corporate practices, end goals and its flexibility to change its levels of oil sales to meet its end goals and corporate strategies.

In considering these features, the study will address

* the extent to which national oil companies control world energy resource development, including the size of oil and gas reserves managed by these firms, and the implications of that control for the stability of world energy supply
* the influence of national oil companies on the industry structure and pace of resource development and the nature of their activities on future market operations and market failures
* trends in how national oil companies are being organized; how that organization will affect their ability to raise capital to investment in oil and gas resources and what impact their corporate practices will have on overall energy supply, pricing and security
* the interplay between emerging national oil companies, major oil producing countries and Western consumer countries and the impact of this interaction on the question of energy security and stability of oil markets
* policy implications for United States, Japan and other major consuming countries in enhancing energy security, managing geopolitical rivalries emerging over oil and gas resources, and promoting investment in oil resources under the control of national oil companies
* policy implications for the home countries of national oil companies and whether these companies are successful in meeting corporate goals and other national goals such as economic development and energy security

Research Protocol
The study “Strategies and Influence of National Oil Companies on World Energy Markets” will utilize historical case studies as well as advanced economic modeling to examine the interplay between economic, political, cultural and geopolitical factors in oil trade and investment.

Selection criteria for Historical Case Studies on National Oil Companies

The study will consist of ten historical case studies on the history of the formation of ten national oil companies and their asset base, mission, strategies, behaviors and impact on international oil supply, pricing and geopolitics.

The companies were selected on the basis of several criteria. These include:

- historical background to the establishment of the NOC
- the size of oil reserves and oil sales and importance to key consuming countries such as the United States and Japan
- potential to change the size or geographic direction of their oil sales
- level of impact of their activities on world oil pricing, supply, and security
- geopolitical influence
- potential to serve as a business model for other national oil strategies
- level of independence (or lack thereof) in their relationship to their national government

Consideration was given to the nature of the NOCs current organizational structure so that the cases would investigate the wide range of representative types of organizations including full state monopolies, partially privatized firms and fully privatized NOCs.

On a historical basis, NOCs were selected to range from four historical categories of origin that are considered a major influence on their mission and behavior. These historical categories of origin include:

Pre-1960
National oil companies (NOCs) formed around specific local issues, such as improved labor laws and the desire for self-sufficiency.

1960s to early 1970s
Many countries nationalized their assets to regain control from foreign companies.
NOC was created to ensure state control over the country’s oil resources and to gain higher rents from oil production
Nationalizations strengthened OPEC’s ability to raise and regulate oil prices
Some NOCs let foreign companies re-enter as contractors.

1980s
OPEC no longer had a fixed oil price; commoditization of oil prices, price volatility and falling oil price levels cut into profitability of national oil companies and hurt national treasuries
Oil ministries and NOCs restructured to increase efficiency; profit and return on capital standards were increasingly employed

1990s to Post-2000
Countries with economies in transition reorganized their oil ministries to form NOCs and private firms

Countries with newly discovered oil fields create national oil company to oversee newly emerging national resource development

<table>
<thead>
<tr>
<th>Pre-1960</th>
<th>1960s to early 1970s</th>
<th>1980s</th>
<th>1990s to present</th>
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<tbody>
<tr>
<td>PEMEX (Mexico)</td>
<td>Sonatrach Petroleum Corporation (Algeria)</td>
<td>Saudi Arabian Oil Company – Saudi Aramco</td>
<td>China National Petroleum Corporation - CNPC</td>
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<tr>
<td>ONGC (India)</td>
<td>Kuwait Petroleum Corporation – KPC</td>
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<td>China National Offshore Oil Corporation – CNOOC</td>
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<tr>
<td>Petrobras (Brazil)</td>
<td>National Oil Corporation (Libya)</td>
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<td>Rosneft (Russia)</td>
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<td><strong>Iraq National Oil Company – INOC</strong></td>
<td><strong>Petronas (Malaysia)</strong></td>
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<td>Lukoil</td>
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<tr>
<td><strong>National Iranian Oil Company – NIOC</strong></td>
<td><strong>Nigerian National Petroleum Corporation – NNPC</strong></td>
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<td>Kazmunaigaz (Kazakhstan)</td>
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<td><strong>Statoil (Norway)</strong></td>
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**Common Data Sets for NOC Historical Case Studies**

Each case study will include common analysis of key operational and performance data for the NOC under investigation including the following criteria:

- **Size** (International Ranking, Number of Employees, Value of Assets)
- **Assets** (Reserves, Downstream and Export Facilities)
- **Operational Data** (upstream and downstream production, domestic sales, export volumes, export infrastructure (pipelines, terminals, etc)
- **Financial Performance** (Revenues, Profitability (if available), Debt, International Borrowing, Bonds or Other recorded use of capital markets)
- **Organizational Structure** (including degree of privatization)
Operational Data should be evaluated according to the following criteria:

Does the NOC have the flexibility to change the levels of its oil sales?

If so, under what constraints? Is this flexibility tied to overall oil price levels? If so, for how long with the NOC have this flexibility?

Does the NOC have the flexibility to change the geographic direction of their sales or its customer list? How do infrastructure issues affect this flexibility? If the NOC has flexibility to change its export strategies, for how long will it have this flexibility (pipeline plans, sanctions etc)

Key Research Topics of Inquiry

Each historical case study should follow a basic format that outlines key elements of the investigation into its history, structure, strategies and geopolitical impacts. Suggested format is as follows:

A. Overview
   1. Size
   2. Assets
   3. Key Performance Measures
4. Explanation of its Importance to International Energy Market Trends

B. History
1. Why was the company formed?
2. What is the historical backdrop to the formation?
3. How did/does this historical backdrop influence the company’s strategies and behaviors?
4. Organizational structure of company (including cultural influences) and history of any reorganization of assets or leadership including level of privatization
5. Have the aims and goals of the NOC changed over time? What has induced these changes?

C. Relationship to Government and Other Domestic Political Actors
1. Leadership: Who leads the company and what are their relationships to national political leaders and groups?
2. Oversight: Who has oversight or regulatory role over the NOC in its home country?
3. Non-Commercial Activities: Does the NOC engage in any non-commercial activities? How are those activities related to national or local politics?
4. What political role does the NOC play in its home country?
5. Can the national oil company make its own decisions about long term commitments to infrastructure development? If not, who makes these decisions? What role does the NOC play in the decision making process?

D. Strategies and Behaviors
1. Financial Performance, Corporate Strategy, and Goals
   a) Does the NOC have any constraints on investment capital and how does it deal with those constraints?
   b) Who makes decisions about the long term commitments to infrastructure development and accessing capital?
2. Oil Investment, Supply and Pricing Policies
   a) Do oil prices play a role in decision-making about upstream investment and oil sales levels?
3. Access to and Use of International Capital Markets

E. Future Role in Global Energy System and Oil Geopolitics
1. Does the NOC shape or influence its national foreign policy? Does it make export route decisions?
2. What is the importance of the NOC in future oil supply and pricing?
3. What international alliances or partnerships does this NOC have that will shape the future structure of the international oil industry or oil geopolitics?

Within this basic outline, individual historical case studies should consider a number of key issues that are relevant to the overall study goals. These issues might be of greater or lesser importance, depending on the individual history and nature of the NOC and therefore case study authors are requested to consider issues that are of greatest relevance to their individual entities. However, to allow for cross-cultural comparisons, authors should, over the course of their investigation, consider why
particular study issues might not be relevant in the context of the history and operation of an individual NOC and explain these differences.

**Key Issues for Consideration in Investigating the Strategies and Behaviors of NOCs**

**Historical Issues**

- When was the NOC created?
- Why was the NOC created?
- How was it created? How did it get its assets? Nationalization? Seizures from foreign operators? Greenfield investment?
- Is the NOC seen as the final step to manage oil resources or as a temporary or transition institution?
- Have the goals of the NOC changed? If so, under what influences?

**Social and Cultural Influences**

- Does the NOC perform any social functions in its home country?
- What social, cultural and religious factors influence the strategies and practices of the NOC?

**Operations and Financial Issues**

- What is the efficiency of the NOC versus private counterparts?
- Does the NOC dominate in the sector? If so, what methods does it use against private competitors to ensure this dominance?
- What relationships are being developed between the NOC and international oil companies (IOCs)?
- Does the NOC perform any other special functions or have special privileges that give it competitive advantages?
- How large a role does the human leadership factor play in the development/success of the NOC?
- How does the business model/organizational structure of the NOC influence its development of new technologies and expanded infrastructure?

- What is the impact of international financial markets on the NOC?
- Does the NOC have access to capital from international capital markets? Who makes the decision about whether the NOC can access capital from international capital markets? Can the NOC make its own strategies or is the decision making in another organization or individual such as the national leader, finance ministry, or another organization of government?
- Does the organizational structure of the NOC affect its ability to raise capital for investment in oil resources?
- Are there constraints on the NOC’s use of investment capital?
- How does the NOC’s corporate strategies and practices impact its ability to deliver oil supplies? How does it impact overall energy supply, pricing and security?
How does the NOC manage constraints (technical, financial, human resources, etc...)?
What is the influence of government reform and regulatory policy (including privatization) on the NOC? How will such policies impact the NOC’s ability to increase supplies and reserves for the international market?

National Level Politics

Does the NOC in general pursue the state or its own corporate interests?
Does the degree of privatization affect the relationship between the NOC and the home government?
How does the NOC contribute to national energy security for its home base country?
Does the NOC dominate the sector in country?
What is the role of the NOC inside its home country on domestic politics?
What role does domestic politics play in influencing the investment strategy and business operations in country and in the international market?
What is the relationship of the NOC to the income stream in the country?
Is the NOC a source of government corruption or waste and if so, how is this corruption or waste exercised?
How and under what kind of rules are the strategies of the NOC formulated?
How does the policy making structure and decision making process of the home government influence the NOC’s policies?

Oil Geopolitics

How will the financial performance of the NOC influence its ability to expand oil and gas production and supplies to the international market?
Will the NOC be able to meet future demand or will it lag in its ability to replace its reserves and production?
What role does the NOC play in its nation’s foreign policy debate and policy setting?
What role does the NOC play in influencing the foreign policy of countries where it holds oil and gas?
How does the country’s foreign policy impact the operations of the NOC and its business strategies and investment?
How does the NOC influence international trade and investment geopolitics and multinational frameworks?
What role does the NOC play in decisions regarding export transportation routes from its country?
How does the business model of the NOC affect its relationships with governments, foreign governments, and foreign oil companies?
What are the future ties of the NOC with the United States, Japan and other important oil consuming countries and how will that affect geopolitics? Energy security?
Can U.S. policy have leverage over the behavior of the NOC? Japanese Policy? If not U.S. policy, is there any other trade partner or world power whose government has leverage over the NOC?