OIL AND SECURITY

EXECUTIVE SESSION

MAY 14, 2003

RAPPORTEUR'S REPORT

John F. Kennedy School of Government

Harvard University

Cambridge, Massachusetts 02138

CITATION

This document appears as discussion paper 2003-08 of the Belfer Center for Science and International Affairs. Comments are welcome and may be directed to Henry Lee at the John F. Kennedy School of Government, Harvard University, 79 JFK Street, Cambridge, MA 02138.

This paper may be cited as "Oil and Security Executive Session, May 14, 2003, Rapporteur's Report," BCSIA Discussion Paper 2003-08, Environment and Natural Resources Program, Kennedy School of Government, Harvard University.

The views expressed within this paper are the session participants' and do not necessarily reflect those of the Environment and Natural Resources Program, the Belfer Center for Science and International Affairs, or Harvard University. Reproduction of this paper is not permitted without permission of the Environment and Natural Resources Program. To order copies or to request permission for reproduction, contact: ENRP, Kennedy School of Government, Harvard University, 79 JFK Street, Cambridge, MA 02138 (617-495-1351; enrp@harvard.edu.)

Oil and Security

Rapporteur's Report

Acknowledgement

Given the political changes in the Middle East and the volatility in world oil markets, the Belfer Center for Science and International Affairs felt that it would be timely to bring together many of the nation's top experts on oil and security. The Executive Session, held at Harvard University's John F Kennedy School on May 14, 2003, provided an opportunity to assess how the political economy of oil markets has changed over the past two decades, and to identify the challenges and opportunities that lie ahead.

This report summarizes the major points of discussions and attempts to give equal weight to the opinions and views expressed. The session was off-the record, hence none of the comments is attributed to any single individual.

I would like to thank Joseph Nye, Graham Allison, William Hogan, John Deutch, Phil Verlager and Phil Sharp who generously gave their time in structuring this session. I would also like to express my deep gratitude to Jo-Ann Mahoney and Zannah Marsh who helped with the seminar organization and logistics, and to Isabelle Morin who assisted in the development of this rapporteur's report. Finally I would like to acknowledge William Haney and the Roy Family whose gifts to the Environment and Natural Resources Program made this session possible.

Oil and Security

Rapporteur's Report

On May 14, 2003, Harvard University's John F. Kennedy School of Government hosted an executive seminar on oil and security. The session brought together senior officials from government, business and academia.

Developments in the Middle East have highlighted the need to reassess the economic and political implications of the United States' growing dependence on imported petroleum, and to evaluate the changing relations between the United States and Middle East oil producing countries. Participants discussed how these issues have evolved over the two decades since the publication of "Energy Security"[1], and how they might unfold in the future.

This rapporteur's report summarizes highlights of this discussion. It does not purport to be comprehensive or to support a particular position. Rather, it aims to present a summary of the main issues and arguments. The session was off-the-record, thus this report is careful not to attribute statements or insights to any particular individual.

Introduction: How Has the Situation Changed?

As several opening speakers remarked, and as is so often the case with complex issues, our perception of recent events affects how we conceive or frame a problem. Today, terrorism is at the forefront of our thinking and influences our perception of energy security. In the 1970s, the concerns were somewhat different; the nature of the threat was relatively well understood and defined. It arose from the increasing Soviet influence over oil producing regions and countries, and the threat of supply disruptions by unfriendly regimes. The responses were targeted at mitigating the effects of, or if possible avoiding, supply disruptions, through the creation of strategic petroleum stocks and through international collaboration, diplomacy and engagement.

In framing the problem today, it appears clear that the "Middle East issues" are no longer centered exclusively on oil. Other perspectives are at least equally, if not more, central to the problems and their solutions – political and economic development, capacity and institutions building, and improvements in governance.

In the future, even as we look beyond extrapolating the current conditions to underlying realities, four emerging trends and changes will affect the debate and the public's perspective of the energy security problem. They are:

- **Terrorism**. Terrorism has emerged as a key concern in two regards. One is the risk to the oil industry's infrastructure and its "soft targets" in both consuming and producing countries. The threat posed by non-state sponsored terrorism is closely linked to the capacity of local governments and institutions to prevent the activities of terrorist organizations that seek to destroy or disrupt energy assets. The second

[1] Deese, David A, and Joseph S. Nye (1981). Energy and Security: A Report of Harvard's Energy and Security Research Project, John F. Kennedy School of Government, Ballinger Pub. Co., 489 pages.

key concern is the use of the proceeds from oil sales to fund terrorist activities. This dimension relates to state policies that deliberately support terrorism, either directly by funding terrorist organizations, or indirectly by turning a blind eye to the flow of capital to these organizations.

- **Natural Gas**. Natural gas is evolving to become a worldwide commodity. Prices may eventually be set on the global market, with adjustments made to reflect transportation costs. Increased penetration of natural gas may make the OECD countries dependent on imported gas as well as imported oil, but countries exporting natural gas are often different than those exporting oil, and there may potentially be more players and thus opportunities for a more diversified supply.
- **The Environment and Climate Change**. Increased concern over global warming may result in petroleum prices being set to reflect the cost of carbon emission reductions, pollution controls and required offsets, thus internalizing the carbon externality of oil. The challenge of addressing global warming could change the debate from one that centers on economic and security concerns, to a North-South debate on curbing carbon emissions.
- **China**. China's growing oil dependence will affect the country's strategic interest in the Persian Gulf and in alternative sources of supply, even if they are comparatively more expensive, e.g. Kazakhstan and Russia.

The discussion during the two sessions covered six general themes: *(1)* the changing nature of vulnerability, *(2)* the security implications of a regime change in Saudi Arabia, *(3)* the existence and use of strategic petroleum reserves, *(4)* the future role of natural gas, *(5)* the emergence of China and developing countries as major players in oil markets, and *(6)* oil demand, carbon and environmental impacts. The main arguments put forth under each theme are presented in the following sections.

CHANGING NATURE OF VULNERABILITY

This theme occupied an important part of discussions throughout the seminar. Three questions were explored: *(1)* how should countries define the problem of oil security, *(2)* how has the situation changed in the 30 years since the "oil embargo", and will these changes make the United States more or less vulnerable, *(3)* and how will future oil price shocks affect the US economy.

Defining the Problem

Oil security has two main dimensions. Each needs to be considered separately: (1) the more common "economic" threat, i.e. the price effects of supply disruptions and their impact on the economy, and (2) the use of oil rents by countries with aspirations that threaten our national and global security, most notably through their support of terrorist organizations, or their acquisition of weapons of mass destructions (WMD). The ongoing threat from WMD and its potential connection to oil revenues makes oil security an ever more relevant issue.

Some seminar attendees adopted a broader perspective, pointing out that the threats to our security in general, and to oil security in particular, arise from a broader set of

"development-related" issues: political governance structure, lack of transparency and public participation, economic under-development, HIV/AIDS, religious fundamentalism, and intra- and extra-territorial ethnic conflicts. Military intervention by itself will not eliminate security threats. Only a concerted effort to tackle these overarching issues will address the threat of terrorism and economic insecurity.

Lastly, participants noted the devastating impacts that high energy prices already have in various parts of the developing world. Price spikes can bring havoc to the imports-dependent economies of countries of concern to U.S. security, such as Pakistan. Meanwhile, low energy prices in exporting countries fuel higher domestic demand, and when combined with rapid demographic growth, can restrain these countries' future export capacity, jeopardize their revenues, and place further pressure on their societies.

Changes Over the Last Three Decades

The net impacts of the changes that took place over the last 30 years seem to be mixed.

On the one hand, energy intensity has been declining over the period due to two factors: technological innovations that improved energy efficiency, and the concurrent transition to an increasingly service-centered economy. Some participants asserted that strategic petroleum reserves, created in response to the crises of the 1970s, are providing industrialized countries with the ability to mitigate the most severe supply disruptions, were they to occur[2]. Meanwhile, a sustained policy of engagement and supply diversification has brought more producers into the global market. Consequently, the world's oil supply is now increasingly geographically diversified. In the last two decades, the share of the top ten producing countries has dropped, while the number of oil producing countries has grown. This serves to reduce the overall threat, even though it increases the probability of disruption in any one country at a given time. Diversification of supplies and increased competition have been important pillars of the oil security response over the last few decades.

On the other hand, global oil consumption continues to grow. The globalization of markets means that the OECD countries, and the United States in particular, are not only affected by supply disruptions through their own imports, but also, through the impact on the costs of manufacturing and transporting goods, by disruptions affecting China, India, and other trading partners. Moreover, with the ratio of non-OPEC supplies to total oil supplies decreasing and demand growing in many parts of the world, OPEC is expected, in the future, to gain a larger share of the market, and thus to be in a better position to exercise market power and drive prices upward. Forecasts predict that by 2025, OPEC countries will supply 56% of the traded petroleum volumes, compared to 44% in 2001[3]. Some participants argued that this greater market share should enable OPEC, or more specifically the Gulf countries, to gain a tighter control of world oil supply and pricing.

Other participants countered that the concern over OPEC control of prices is largely exaggerated since, in their opinion, OPEC only has power when prices are low and investment in non-OPEC supplies is sharply reduced.

---

[2] A more detailed presentation of the discussions regarding Strategic Petroleum Reserves is presented later in this document.

[3] EIA International Energy Outlook 2003.

The continued existence of OPEC and of its market power is implicitly recognized in recent EIA and IEA demand forecasts. Participants observed that future oil prices, and their stability, will largely depend on the structure of the market. The world will either move to a more competitive market with little incentive to act as swing producer, or will continue to have OPEC, and Saudi Arabia in particular, hold substantial power over prices and production levels.

Additionally, seminar attendees remarked that few market players would want to see a truly competitive environment emerge, as the resulting low prices would bankrupt all but the lowest cost producers, which are the Arabian Gulf countries, not the non-OPEC countries. Low prices will thus give more relative economic power, not less, to Middle Eastern oil producers.

The impacts of a potential regime change in Saudi Arabia, which are covered in greater detail in a later section of this report, are also uncertain. A new Saudi administration may decide to change its long-term view and revisit its current role as swing producer, preferring lower volumes at higher prices.

Lastly, participants noted the experts' poor record of forecasting prices, developing a reliable assessment of the scarcity of oil and gas resources, or predicting the consequences of oil disruptions. In the 1970s, the oil industry and the government warned of significant price increases that never materialized. Thus, it is probably wise to maintain some skepticism regarding long-term predictions.

Asymmetric Impacts

Seminar attendees remarked that oil supply disruptions and price fluctuations are often characterized by macroeconomic asymmetries. Oil importing countries have a harder time adjusting to oil price increases than to oil price declines.

Participants noted that the observed macroeconomic asymmetry is most likely due to government intervention; governments tend to change their monetary policies when oil prices increase, while remaining idle when prices drop. Government intervention has thus proven to be largely ineffective as was exemplified by the price control failures of the 1970s. Some participants were encouraged that the Federal Reserve did not react to the price increases witnessed in 2002-2003, and that the market stabilized quite effectively without government intervention. Others pointed out, however, that the U.S. recession, combined with excess capacity around the world, made it very unlikely that higher oil prices would translate into general inflation. There was, therefore, little pressure on the Federal Reserve to react.

Other participants argued that price fluctuations in themselves are not necessarily the key concern, since market participants expect prices to move up and down, providing opportunities for both consumers and producers to hedge these short-term fluctuations. The real problem would be prices that increase and reach a plateau from which they don't come down again. This could happen if producing countries were ever able to hold prices high for a period of 3-5 years in an effort to boost their revenues. Historically, this has not occurred and many participants argued that it would be a low probability scenario.

SECURITY IMPLICATIONS OF A REGIME CHANGE IN SAUDI ARABIA

Some participants noted that the only reason why we haven't seen a severe oil crisis in recent years is that Saudi Arabia has been able, and so far willing, to increase its production to avert severe oil shocks. It has served as the world's "swing producer", willing to keep billions of dollars worth of capacity idle for extended periods of time. Participants asked whether the global oil market needs a "swing producer", and who might play this role in the coming decades, if not Saudi Arabia.

The criteria for candidates, participants reasoned, are essentially *economic*. The swing producer would need to be the low cost producer, and someone with sufficiently centralized and enforceable policies. It is unlikely to be Russia given the multitude of private producers with different interests, and the limited discretionary power of the central government. While Iraq may have the prerequisite volume of reserves, its economic needs will make it virtually impossible for it to hold idle 20-25 percent of its production capacity. In the short- to medium-term, participants concluded, this leaves only Saudi Arabia.

In the past 30 years, the impacts of the Saudi policy on the world market have been mixed.

On the one hand, Saudi Arabia has provided a degree of price stability by releasing additional oil on the market whenever low supplies threatened to drive prices too high. On the other hand, the policy has been costly for countries attempting to challenge the position of Saudi Arabia. The Saudis have responded aggressively to protect their leading role in the world market. The strategy thus provides it with considerable influence in times of crisis, influence that it has paid for dearly in terms of substantial idle capacity. Whether it can continue to do so is politically uncertain. Seminar participants pointed to the growing social and economic pressures placed on government revenues as the country grapples with demographic and economic development needs. The Saudi economy remains very narrow and extremely dependent on its oil industry, and the prospects for significant economic diversification are poor at least in the medium term. This dependence on oil makes the country vulnerable to price swings and their related revenue fluctuations. Will the evolution of domestic political forces allow Saudi Arabia to continue to bear the costs of being the world's swing producer? Or will it opt to increase its annual revenue flows and forego its international power base?

Given the central role of Saudi Arabia, participants raised the question of the extent to which a potential regime change in that country may serve to increase oil security, or instead destabilize the oil markets. The discussion explored the possible behavior of a new regime in Saudi Arabia.

On the one hand, some participants saw the emergence of an "extremist" government as highly unlikely, with the assumption that such a government might adopt a strategy of lower oil production and higher prices. These participants pointed to the fact that the Islamic movement has mostly been attracting disgruntled urban youths and has had little appeal so far for the political elites. Many Saudis have been exposed to and educated in western countries and are now waiting on the sideline to play a growing role in Saudi economy and politics. The political structure is gradually changing such that opportunities may emerge for these western-minded and western-educated Saudis. Furthermore, given the lack of alternative sources of capital, it is unlikely that any regime would cutoff oil

production. Economic necessity will dictate that the government maintain export-friendly policies to preserve revenue floes in the medium- and long-term.

On the other hand, other participants noted that a change of regime in itself might be problematic. The problem resides not necessarily in the risk of a new regime shutting off production – as economic necessity may well prevent them from doing so – but in the exodus of skilled personnel and foreign expertise. Without the personnel required to operate the system, there would be a drop in production, or at the very least a curtailment of the investment needed to maintain and expand production. Participants noted that history has not been kind on the impacts of regime change on oil production. It took approximately 10 years for Russia to start returning to its former production levels (which it hasn't yet reached), and Iran has yet to return to the levels it was producing in 1980. It is thus conceivable that the world oil supplies could be disrupted considerably longer than the "few months" that analysts have hinted at so far.

EXISTENCE AND USE OF STRATEGIC PETROLEUM RESERVES

The Strategic Petroleum Reserve (SPR) generated a great deal of discussion both regarding its role in preventing or mitigating oil crises in the last 30 years, and how best to use it in the future.

A number of attendees argued that the SPR plays a deterrent role by leaving open the option of using oil from the reserve in the event of a price hike. The Saudis seem to have been eager to release supply rather than see the Department of Energy capture the rent from selling oil on the market.

Some participants countered that the role of the SPR in regulating markets has not been demonstrated, and furthermore that the SPR can only be an effective deterrent if there is a belief that it would indeed be tapped. Unless the deterrent is credible, its costs outweigh its benefits, and the only way the SPR becomes credible is if it were used. The recent crisis in Venezuela was the type of event that the SPR was designed to offset, and yet the US government opposed tapping the reserve.

While most attendees noted the decrease in private oil stocks over the last decades, there was disagreement on the extent to which the existence of the SPR was displacing private stock to public stock. Some participants stressed that the structure of the industry, particularly the larger number of smaller players, financing constraints, and a focus on reducing asset bases to improve company balance sheets, have reduced the incentives for private companies to hold more than bare minimum oil stocks.

Discussions also covered whether, and what, rules should be developed on when and how to use the reserve. Some participants recommended that specific guidelines be developed that would define the price and supply conditions that would justify releasing oil from the reserve. This, they argued, would set clear conditions for the market and effectively serve as a price cap on oil prices. On the other side of the argument, some suggested that such conditions were complex and difficult to predict. They instead suggested that policy makers would recognize the moment to intervene, "if and when it occurred". The SPR, they said, is more a political and strategic instrument than an economic one. It serves to reassure

policy makers that they could intervene were market conditions to severely deteriorate. The SPR should thus be justified using criteria beyond simple economic costs and benefits.

FUTURE ROLE OF NATURAL GAS

The emergence of natural gas as a global commodity suggests the possibility of offsetting some of the difficulties faced with oil supplies. The growth in LNG trade in the last decades offers an alternative energy source to Asian countries, particularly for power generation. The growing importance of natural gas is illustrated by the multitude of pipelines currently being proposed to bring natural gas into China from its western and northern neighbors. India has also been considering how it could bring additional supplies of natural gas through pipelines from Iran and Bangladesh and has a number of LNG projects under consideration.

Some participants noted that meeting the growing needs to supply natural gas raises its own share of security problems. Pipeline routes for instance represent potential targets for terrorist attacks. LNG transportation from the Middle East to Asia also carries geopolitical implications; one of China's growing concerns is the potential risk of supply disruptions of the maritime oil and gas routes into East Asia by the Indian navy.

In terms of the market structure for gas, some participants argued that natural gas markets do not have a surge capacity similar to that offered for oil by Saudi Arabia. Natural gas developments generally follow demand, and in the case of LNG in particular, are often dependent on advance purchase contracts, thus providing less flexibility. Gas prices on the spot market could therefore be even more volatile than oil prices.

EMERGENCE OF CHINA AND THE DEVELOPING WORLD

Participants discussed their concern for the oil security of developing countries, the growing role these countries will play in the markets, and their influence on the geopolitics of oil. As noted under the theme of natural gas, China and India will become much larger players than in the past.

China, in particular, is becoming an increasingly important geopolitical player in the Middle East and an actor that is proving difficult to accommodate. China has been willing to strike bilateral trade deals for oil with a number of countries, exchanging oil for what its counterpart seeks - which is often arms, missiles or nuclear technology. China's geopolitical strategy could well become a destabilizing force unless it is more closely integrated within an international framework.

On the other hand, some attendees countered that China's growing role may serve to stabilize the region by serving as weighty consumer, and thus increasing incentives and pressures on oil producing countries.

Suggestions offered during the session included the possible inclusion of energy, particularly oil, in international multi-lateral trade agreements through the World Trade Organization (WTO), and the possible association of China and India with the International Energy Agency. Including energy exports and imports in global trade agreements would improve the integration of oil producing countries within the international scene, and lead to

a beneficial redistribution of energy-intensive industries where they can be most efficient (e.g. locating petrochemical industries where there is ample supply of oil and natural gas). It could therefore help diversify the economies of the Middle East region by broadening their industrial base.

OIL DEMAND, ENVIRONMENTAL IMPACTS AND CARBON

If predictions prove correct, oil will still represent approximately 40% of the world's energy mix by 2020. The global demand is progressively shifting toward the developing world, particularly Asia where two major consumers will emerge: China and India. Both globally and within the United States, the patterns of oil use increasingly indicate a shift toward the transportation sector, which will account for 74% of US petroleum consumption by 2025[4]. Some participants pointed out that this is the least flexible part of the demand, thus future vulnerability may increase rather than decrease.

Participants pointed out that the oil market is considerably more liberalized today than it was twenty years ago. While national companies continue to dominate, they increasingly operate like private companies, and respond to the same pressures and imperatives as their private competitors. Some attendees noted the need to continue on the path to liberalization (which implies managing the current backlash against the Washington Consensus), and to promote free trade in energy as a means of promoting a diversification of the industry in oil producing countries, particularly in Saudi Arabia.

The attendees saw as encouraging that, in the past few years, the oil industry has proven remarkably resilient in responding to events that could have provoked serious supply disruptions (e.g. Nigeria, Iraq, Venezuela). The industry has shown a great capacity to manage its external setting through technological and institutional innovations. It has also been able to adapt to significant changes in environmental regulations. The costs of complying with the Clear Air Act were thus much less costly than initially predicted.

Participants suggested that the role of the government is to foster technological innovation to improve efficiency and displace oil consumption, noting that the process of innovation often requires large upfront investments in markets that don't currently exist. The key is defining what we want to do, and how we can accomplish it most effectively.

Discussions addressed the relationship between oil consumption and the environment. Participants noted that by 2020, oil rather than coal is expected to be the chief source of CO_2 emissions. The threat of global warming and the need to curb rising carbon dioxide emissions will likely encourage the development of more efficient technologies, and lower the economy's dependence on oil. Policy measures to foster such a shift include internalizing the environmental cost of oil, imposing a tax on carbon or instituting a carbon cap-and-trade program. Some countries are already pursuing such measures, and it is probable that over the next decade others will follow.

Given the rise in energy consumption in developing countries such as China and India, developing countries should be included in any international effort to spur additional research, demonstration, deployment and dissemination – through technology transfer and

[4] Based on EIA estimates.

financial assistance to help them develop using cleaner energy technologies. These countries are confronting serious environmental problems, and have little choice but to be most interested in how environmental issues are addressed, whether or not a global market for carbon develops, and what help they will receive to meet their emissions targets.

In terms of how to frame the issue for the public, some participants noted that the impacts of oil consumption on the environment may affect consumption more than concern over energy security and imports from unfriendly regimes.

Concluding Remarks

Participants suggested that the oil and security problem remains one of critical importance to governments of both producing and consuming countries. They suggested that additional discussion and research on oil and security should focus on questions such as:

1. Will Saudi Arabia be willing and able to play the role of swing producer over the next two decades, which would imply a willingness on its part to make major new investments, and if not what would be the consequences?
2. Will the increasing role of natural gas and the emergence of global markets and transportation networks raise new security issues?
3. Would integrating oil within international trade agreements improve supply security? Is it realistically achievable?
4. What is the value of the Strategic Petroleum Reserve and could it be improved by defining more clearly when and how it should be used?

Oil and Security

Rapporteur's Report

List of Participants

Graham Allison
Director
Belfer Center for Science and International Affairs
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
graham_allison@harvard.edu

John Brodman
Deputy Assistant Secretary, PI-20
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
John.Broadman@hq.doe.gov

Richard Cooper
Maurits C. Boas Professor of International Economics
Harvard University
1033 Massachusetts Avenue
Cambridge, MA 02138
rcooper@fas.harvard.edu

Charles Curtis
President
Nuclear Threat Initiative
1747 Pennsylvania Avenue, NW
Washington, DC 20006
curtis@nti.org

David Deese
Professor of Political Science
Boston College
140 Commonwealth Avenue
Chestnut Hill, MA 02467
david.deese.1@bc.edu

John Deutch
Institute Professor
Massachusetts Institute of Technology
Department of Chemistry
Room 6-208
Cambridge, MA 02139
jmd@mit.edu

Dermot Gately
Professor of Economics
New York University
269 Mercer Street
New York, NY 10003
dermot.gately@nyu.edu

Edgard Habib
Chief Economist
Chevron Texaco
6001 Bollinger Canyon Road
San Ramon, CA 94583-2324
edgardhabib@chevrontexaco.com

John Holdren
Director
Science, Technology and Public Policy Program
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
john_holdren@harvard.edu

William Hogan
Lucius N. Littauer Professor of Public Policy and Administration
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
william_hogan@harvard.edu

Amy Jaffe
Wallace Wilson Fellow for Energy Studies
James A. Baker III Institute
Rice University MS40
6100 Main Street
Houston, TX 77005
amjaffe@rice.edu

Dale Jorgenson
Samuel W. Morris University Professor
Harvard University
Economics Department
Littauer 122
Cambridge, MA 02138
djorgenson@harvard.edu

Adrian Lajous
Oxford Institute for Energy Studies
Colegio 620
Mexico DF 01900
Mexico
alajous@petrometrica.com

Robert Lawrence
Albert L. Williams Professor of Trade and International Investment
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
robert_lawrence@harvard.edu

Henry Lee
Jaidah Family Director
Environment and Natural Resources Program
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
henry_lee@harvard.edu

Michael Lynch
President
Strategic Energy & Economic Research, Inc.
14 W. Chardon Road
Winchester, MA 01890
lynch@EnergySEER.com

Roseanne Model
Attorney, Chevron-Texaco
Kennedy School MPA 2003
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
roseanne_model@ksg03.harvard.edu

Edward Morse
Executive Advisor
Hess Energy Trading Company, LLC
1185 Avenue of the Americas
New York, NY 10036
elmorse@hess.com

Shirley Neff
Senior Advisor to Goldwyn International Strategies
1325 13th Street, NW
Washington, DC 20005
shirleyneff@earthlink.net

David Nissen
Professor
Center for Energy Policy
Columbia University
School of International & Public Affairs
1114A International Affairs Building
New York, NY 10027
dn2022@columbia.edu

Joseph Nye
Dean
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
joseph_nye@harvard.edu

Roger Owen
A.J. Meyer Professor of Middle East History
Center for Middle East Study
Harvard University
1430 Massachusetts Avenue
Cambridge, MA 02138
eowen@fas.harvard.edu

Frank Parra
Former Secretary-General, OPEC
P.O. Box 672
East Orleans, MA 02643
FRParraM@aol.com

Paul Portney
Senior Fellow and President
Resources for the Future
1616 P Street, NW
Washington, DC 20036-1400
portney@rff.org

Jim Ragland
Director
Economic Research Group
Aramco Services Washington Office
1667 K Street, NW, #1200
Washington, DC 20006
Jim.Ragland@aramcoservices.com

Jeff Seabright
Green Strategies, Inc.
1312 18th Street, NW, Second Floor
Washington, DC 20036
jeff@greenstrategies.com

Brenda Shaffer
Research Director
Caspian Studies Program
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
brenda_shaffer@harvard.edu

Philip Sharp
Senior Policy Advisor
Van Ness Feldman
1050 Thomas Jefferson Street, NW
Washington, DC 20007
prsharp@attbi.com

Philip Verleger
President
PKVerleger LLC
15 Torrey Pines Lane
Newport Beach, CA 92660
PVerleger@compuserve.com

John White
Chair
Middle East Initiative
Harvard University
John F. Kennedy School of Government
79 John F. Kennedy Street
Cambridge, MA 02138
john_white@harvard.edu