

# Oil Resources: Markets, Politics, and Policies

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Energy is highly globalized. Much of the world's energy consumption flows across international borders; 55 percent of world oil production is consumed outside the producing country. Also, much of the world's energy is produced by firms operating on a global scale, and nearly all major energy projects now under way or planned involve financing, management, and technology from global energy firms. International energy companies are less and less clearly identified as "citizens" of one country, as illustrated by firms like BP Amoco and Royal Dutch Shell, which are U.S./British and Dutch/British, respectively.

The question is whether this globalization has contributed to Western security—including making possible a safer and more prosperous future—or has exacerbated its troubles. Arguably, the Western democratic community's reliance on imported oil is its most significant strategic vulnerability to turmoil in the rest of the world. Nearly all other resources—physical, technological, financial, and human—are largely available within the Western democratic community, with the international flows of these resources being largely among the Western states. By contrast, the West depends heavily on energy imports from areas that are outside the community of industrial democracies.

Even so, this chapter argues that energy globalization has generally been good for security: with effective policies and use of markets, the democratic community should be able to retain its access to vital supplies of oil and other energy. At the same time, the Western democracies often will not have the same perspective on all energy-related issues. In two major areas, the United States has a different approach than either Europe or Japan: Persian Gulf security and environmental protection. The former has many implications for the U.S. military, while the latter has few. Rather than provoking a needless crisis by pushing too hard to reach a consensus, the better approach is moderation in all things: build on the commonalities, but accept the differences between these areas.

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## Setting the Stage

The Western democratic community depends on energy imports, and much of the imported energy comes from turbulent regions. Regarding both the share of imports in consumption and the concentration of supply from one region, the greatest vulnerability is in oil. In 1998, the United States, the European Union (EU), and Japan imported 25 million barrels per day (mbd) of oil while consuming 37 mbd. Meanwhile, the Persian Gulf countries exported 18 mbd of global total exports of 40 mbd. In other words, instability in the Persian Gulf could hit hard at the economies of the Western industrial democracies.

At the same time, energy security has not been a major concern of U.S. policymakers in recent years. Less than 2 percent of *A National Security Strategy for a New Century* is devoted to energy security. Especially in light of the dramatic oil price fluctuations since 1997, it is reasonable to ask how much risk and uncertainty regarding energy security are appropriate for U.S. strategy to accept. A big risk is one thing; a small risk is something else. Effective U.S. policies can help transform the former into the latter.<sup>1</sup>

It is also appropriate to consider how much the Western democratic community should coordinate on energy policy. Compared with the United States, energy, especially gasoline, is taxed much more in the European Union and Japan, which also implement stricter regulations designed to curb greenhouse gas emissions. Meanwhile, the United States assumes nearly all the responsibility for defense of the Gulf Cooperation Council (GCC) countries (Saudi Arabia and the small Arabian Peninsula monarchies). One way to look at this difference is to say that the approach of the European Union and Japan to energy security is to limit demand, while the U.S. approach guarantees supply. Perhaps the two approaches are complementary, but the differences can also lead to tensions, be they over policy toward Iran and Iraq or over environmental agreements such as the Kyoto Protocol of the Framework Convention on Climate Change.<sup>2</sup>

## Key Phenomena, Dynamics, and Trends

Oil prices have been on a roller coaster in recent years. Prices declined sharply in late 1997 and remained at low levels through early 1999; at the lowest in late 1998, the average price paid by American refiners dropped to \$9.39 per barrel. In March 1999, major oil exporters—members of the Organization of Petroleum Exporting Countries (OPEC) plus Russia, Mexico, and Norway—agreed to cut production by 1.7 mbd, ostensibly a small amount, but enough to have a big impact on oil prices in the global market. As often when they have faced an acute crisis, the oil exporters generally observed these quotas. (Analysts say that OPEC is like a tea bag: both work best when in hot water.) Oil prices rose to around \$35 per barrel in early 2000 due to quota adherence and strong world economic growth that boosted oil demand. The price rise led to sharp increases in OPEC revenue. The Department of Energy (DOE) estimates that OPEC oil export revenue, which had been \$99 billion in 1998, rose 34 percent in 1999 to \$133 billion and will rise an additional 59 percent in 2000 to \$211

billion. Furthermore, the revenues of major non-OPEC oil exporters such as Russia, Mexico, and Norway will also double between 1998 and 2001.

The experience of 1997–2000 demonstrates that oil-exporting governments continue to exercise considerable influence over world energy supplies and prices; however, it would be wrong to conclude that OPEC controls global energy. In fact, the key trend affecting the world energy situation is globalization. Global market forces are determining the supply and demand for energy, beyond the ability of any government or regional bloc to control. Western governments have reduced the regulatory web that once was spun tightly around the energy business. Unlike during the years of the Cold War, market forces rather than command economies are now driving production and consumption decisions in Eastern Europe and Russia, and are playing a larger role in China. Even OPEC's power has eroded as oil is exported by more countries. OPEC was able to affect world markets in 1999 only because of cooperation from some nonmembers and favorable market conditions.

Indeed, the oil price collapse of 1997–1998 and the subsequent oil price recovery of 1999–2000 were in considerable part the result of market forces. Corporate capital financed the 3-mbd expansion of non-OPEC output in 1994–1997, leading to such an ample supply that the price collapsed in 1997. Mergers and restructuring of the international oil companies (IOCs) and smaller American producers were behind the slashing of exploration and development of new oil fields in 1998–1999. The reduction in the growth of non-OPEC supply was as much behind the tight supply in 1999–2000 as any action by oil-exporting governments. Despite the sustained higher prices in 1999–2000, the IOCs have done little to increase output, being preoccupied by post-merger reorganizations and unable to compete for funds with the vibrant high-technology firms.

Furthermore, the tight oil supply conditions in 2000 were significantly worsened by the extensive oil trade on the New York and London exchanges, especially on the futures markets—contrary to the expectations of economists that large, well-financed markets dampen price swings. In late 1999 and early 2000, oil for future delivery was much cheaper than oil delivered that day, a condition known as “backwardation.” This was a disincentive to increasing output, in that it led consumers and producers to expect that oil prices would have fallen by the time the extra output was available. Backwardation also encouraged the running down of stocks, in that consumers expected they could rebuild their stocks later at lower cost. The result was that stocks fell and production stagnated at precisely the time when consumption was growing quickly—a dangerous combination. The paradox is that while the market did not respond in a way that stabilized prices, OPEC did. In March 2000, partly in response to lobbying by Secretary of Energy William Richardson, OPEC members decided to raise output by 1.2 mbd. In short, market forces have not been able to bring as much stability to energy supply as economic theory would have predicted. Nonetheless, they remain the main determinants of oil dynamics.

The combination of a booming world economy and limited investment in new oil production capacity will make world oil markets taut in 2000–2001. In its April 2000 *Short-Term Energy Outlook*, DOE estimates that world call on OPEC oil will be 31.3 mbd in the last quarter of 2000, while other estimates are even higher. (DOE assumes

that there will be sufficient stockpiles that some could be drawn down; that may be overly optimistic.) In order to supply that much oil, OPEC states will have to produce at close to capacity. No longer will there be sufficient slack in the system to make up for a shortfall from a secondary producer. Specifically, were Iraq to stop its oil exports (which in mid-2000 were close to 2 mbd, including oil smuggled out), there would not be sufficient excess capacity to make up the difference. Oil would be in short supply, and the price could rise quite high quite quickly. This could have a noticeable impact on the world and American economies, and it could lead to pressures to accommodate Iraqi political demands, including a relaxation of UN-mandated procedures designed to control the threat of Iraqi weapons of mass destruction (WMD). In other words, the world oil market will be vulnerable to political pressures from secondary producers, and that, in turn, could create problems for U.S. security policy.

The current price instability is important, but it masks the underlying long-term trend, which is toward lower prices and ample supply. The primary reason for lower oil prices is lower production costs. The cost of finding oil and gas reserves in the United States has dropped from a peak of \$22.11 per barrel in 1982 to \$4.49 in 1996. As the information revolution reduces modeling and sensor costs, a higher proportion of the wells drilled are hitting oil. The greater chances of success make drilling more attractive in more expensive areas, such as deep off-shore oil fields. Additionally, more accurate modeling allows recovery of 40 to 50 percent of the oil reserves in a field, in contrast to the 30 percent recovery rate that was the norm through the 1980s.

Oil is not the only source of energy, but it has been and will remain the single most important fuel. It constituted 47 percent of world energy use in 1970 and 39 percent in 1997. And it is projected to provide 38 percent in 2020. Not only is oil the most important fuel, but also it is the principal element in world energy trade; most natural gas and coal are consumed in the producing country. Natural gas is taking a growing role in world energy supply, providing 22 percent of world energy in 1997 and a projected 28 percent in 2020. Natural gas is cheap, abundant, and less polluting. Gas is likely to be increasingly crossing national boundaries, but its role in global politics will remain secondary because cost factors argue strongly for the use of pipelines, which by their very nature are of concern mostly to the limited number of countries that the pipelines cross. Natural gas can be liquefied by supercooling, but the capital cost is so enormous that suppliers have to date nearly always insisted on creating long-term supply arrangements. Here again, international trade in natural gas usually links a specific pair of countries rather than having direct global impact.

Dependence on oil imports characterizes most of the Western democratic community. DOE forecasts that in 2020, 64 percent of American oil consumption will be met by imports. Most of that will come from the Western Hemisphere rather than the Persian Gulf. Oil from the Persian Gulf comprised only 10 percent of American oil consumption in 1998, and that share is forecast by DOE to drop. As *A National Security Strategy for a New Century* states, "The United States is undergoing a fundamental shift away from reliance on Middle East oil. . . . Canada, Mexico, and Venezuela combined supply almost twice as much oil to the United States as the Arab OPEC countries." Western Europe is experiencing a similar trend of increasing reliance on imported oil (North Sea production being relatively flat), with most oil coming from

places other than the Gulf, primarily the former Soviet Union (FSU) and Africa. Europe's direct energy needs, like those of the United States, are not, and will not be, closely tied to the Gulf.

Both in Europe and the United States, the role of energy in the economy is on the decline. Part of the reason is the shift toward activities that use less energy: information technology requires less energy to produce a dollar of output than does the steel or automobile industry. Another reason is greater efficiency in energy consumption. For example, the average fuel consumption per mile by American vehicles continues to drop, despite increasing average vehicle weight. Overall, in the United States, energy consumption per dollar of gross domestic product (GDP), at 1992 prices, dropped from 19.7 million British thermal units (Btu) in 1972 to 12.6 million Btu in 1998, and DOE forecasts it will fall to 9.9 million Btu in 2020.

Another measure of the decreasing role of energy in the economy is that oil consumption was equal to 6.3 percent of GDP in 1980, but only 1.4 percent in 1999. As a result, the American economy today is much less affected by oil price increases than it was in the 1970s. The price increase in 2000 is expected to raise the share of oil consumption to 1.9 percent of GDP, an increase of only 0.5 percent despite a 30 percent higher price.

Nevertheless, oil prices have the potential to affect overall economic performance. Were prices to rise to \$40 a barrel (compared with an expected 2000 average of \$25), U.S. GDP growth would be about 1 percentage point less than otherwise expected (2 compared with 3 percent), a loss of more than \$90 billion in output.

## **Impact on International Politics and Security Affairs**

The worldwide consensus among consumers and suppliers alike favors easy and secure trade in oil, which alone accounts for 5 percent of world trade—by far the most of any commodity. The Western democratic community has a particularly deep interest in ensuring free trade in oil, given that nearly all its members depend on imported oil. That said, there are several energy-related issues with the potential to roil international politics and security during the next decade: problems from the Persian Gulf, nervousness in Asia, politicking about the Caspian Basin, and disagreements about global warming.

### ***Problems from the Persian Gulf***

The Persian Gulf will remain vital to world energy supplies. If demand continues to rise quickly, the Persian Gulf's share of world oil exports could rise from 45 percent in 1998 to 65 percent by 2020, according to DOE forecasts. With their ample reserves, Persian Gulf countries can readily increase output. DOE forecasts that the Gulf States, which produced 21 mbd in 1998, will produce 42 mbd in 2020.

The heavy reliance on Gulf oil is a matter of concern because the Gulf has many security problems. Many countries have serious domestic problems that could lead to upheaval. Even if the end result were a more pro-Western government (for example, in Iraq), the domestic unrest could disrupt oil production. The region also has a his-

tory of rogue regimes—regimes that are vicious, solitary, and dishonest, though by no means irrational. (*Rogue* does not mean *crazy*.) The key GCC producers of energy and resource producers lack sufficient military forces of their own to fend off aggression by predators. Even short of this, growing oil revenues may provide countries with the money needed to build WMDs and destabilizing conventional capabilities. In light of all these potential problems, the Western democratic community has reason to be involved in guaranteeing Gulf security.

It is not clear to what extent the responsibility for Gulf security should fall on those who import their oil from the Persian Gulf. Economists like to argue that where Gulf oil is sold matters little because disruption of Gulf oil would bring speedy reallocations and raise oil prices for all oil consumers around the world. That argument carries little weight with politicians in both producing and consuming countries. The Saudi leadership is determined that Saudi Arabia should be the largest supplier of oil to the United States. To this end, Saudi oil for sale in the American market is offered at what amounts to a discount of \$0.75 per barrel; that is, Saudi Arabia could earn about \$0.75 per barrel more by selling the oil elsewhere. There is a “world market price” for oil, but the price for a specific cargo at a particular time in a particular port is also influenced by a host of secondary factors—for example, transport costs, whether that port can take large tanker ships, whether that specific grade of crude oil is in short supply at the moment. The annual cost to the Saudi kingdom of this discount is about \$350 million. This behavior is motivated by the conviction that the strategic relationship between Saudi Arabia and the United States is affected by the proportion of American oil consumption that comes from Saudi Arabia. That conviction seems to be shared by many American politicians, who find it difficult to explain why U.S. forces should assume the majority of the Gulf’s security burden when most Gulf oil goes to Asia.

In practice, the burden of guaranteeing Gulf security has fallen largely on the United States. There are several reasons why this is likely to continue to be the case:

- Allies and partners have little incentive to contribute if they are convinced that, in the event they do not act, the United States will provide the security on its own anyway. The risk is that, at some point, the United States may get tired of bearing the burden largely alone.
- If allies and partners were to play a greater role in providing Gulf security, they would want a larger say in establishing a common approach to Gulf security, if not to regional politics. The United States has not agreed with its European allies or Arab partners on some Gulf security issues (such as how to respond to the threat of Iranian WMDs) or on other regional issues (such as the Middle East peace process). The United States may be reluctant to do more to accommodate some European and Arab concerns.
- European nations do not have sufficient forces equipped and trained for rapid deployment to a distant theater, such as the Persian Gulf. It may be more appropriate for them to provide more of the forces to deal with problems closer to their homes, as in the Balkans, thereby freeing American resources to respond to Gulf security threats. The Arab partners of the United States do not have many forces

capable of operating on a modern battlefield at the same pace and standards as U.S. forces. As the revolution in military affairs (RMA) affects U.S. forces, the disparities may grow.

- Europe is no more directly dependent on Gulf oil than is the United States, which makes it difficult for European politicians to commit the resources needed to preserve Gulf stability. The economic argument that the world oil market is a seamless whole, such that turmoil in the Gulf affects all oil consumers, irrespective of where their oil comes from, carries no more weight with European politicians than with American politicians.

The quandary of how to ensure the security of the Persian Gulf may change dramatically over the next decade. The optimistic scenario is that Iran evolves to become more friendly to the United States and Iraq acquires a new, pro-Western government, facilitating a regional agreement on confidence-building and security-enhancing measures that lead to a rollback in weapons of mass destruction and missile programs, and a reduction in conventional military forces. Pessimistic scenarios include internal instability in key countries and WMD/missile proliferation, that is, the acquisition of militarily significant WMD assets by several Gulf States, including those still behaving like rogues. In this event, the outcome could be greater instability, which would put Gulf oil at greater risk in more ways than one.

### *Nervousness in Asia*

Energy consumption is growing rapidly in the Asia-Pacific region. Most of this increase in energy demand has been from China and India, and it has been satisfied by domestically produced coal. Nevertheless, the region's demand for oil has been increasing rapidly. Asia-Pacific consumed 20 percent of the world's oil in 1989 and 27 percent in 1997; its share is forecast to be 29 percent in 2020. Most of Asia-Pacific's growing demand for oil will be met by the Persian Gulf. DOE forecast is that in 2020, Asia-Pacific will consume 33 mbd. Of this, the Asia-Pacific region will produce 27 percent and import 70 percent from the Persian Gulf. Furthermore, the Asia-Pacific market will take about 60 percent of Persian Gulf oil in 2020. As a result, Asia will depend upon the Persian Gulf for its oil, and the Persian Gulf will depend upon Asia for its market.

This trend will raise important questions about the role of the Asia-Pacific countries in Gulf security. Major powers highly dependent on imports from the unstable Gulf might independently attempt to ensure their own preferential access to Gulf oil, rather than participate in the common defense of Gulf security. This independence could take the form of unhelpful policies that work against U.S. interests and cooperative security efforts. A potential example would be Chinese military cooperation with Gulf rogues. Furthermore, major Asia-Pacific powers might want to play an important role in providing security along their sea lines of communication (SLOCs) by developing world-class blue-water navies. This development could perturb Asian politics. For instance, if Japan becomes nervous at a large Chinese navy and decides to develop its own substantial fleet, this might not sit well with various other Asian

states. Furthermore, a world-class blue-water Chinese navy would reduce the relative power of the Navy in the region. It could be argued that the provision of SLOC security for all countries is not a burden on the United States, in that the same naval force that provides that security for cargoes of concern to the United States can also provide security for all cargoes (or, as an economist would put it, SLOC security is a public good). In any event, security of the commercial sea-lanes between the Persian Gulf and Asia will become more important as the flow of oil and other seaborne commodities increases.

### *Politicking about the Caspian Basin*

Ten years out, Azerbaijan, Kazakhstan, and Turkmenistan could produce oil at a rate of 5 mbd, primarily from Caspian off-shore fields in Azerbaijan and the Tenghiz field in Kazakhstan northeast of the Caspian. The Caspian Basin thus is a world-class oil area, but not an alternative to the Persian Gulf. The Caspian Basin also has large natural gas reserves, primarily in Turkmenistan but evidently also in Azerbaijan.

Caspian energy reserves are accessible only through routes that require traversing hostile territory of historical enemies. This could lead to conflicts over control of production facilities and transportation routes or, at least, produce pressure by neighboring countries for unjustifiable income from exploiting resources. In other words, geopolitics predominates in the Caspian Basin, in contrast to the increasing role of market forces in the oil and gas industry in other parts of the world. Russia is the local big power in the region, but other countries are now scrambling to determine how best to advance their interests there. In addition, the United States, Europe, Turkey, Iran, and China have become influential players. The effect is to create a slowly boiling stew.

The U.S. Government has been promoting a trans-Caspian energy corridor to carry Caspian oil and gas west through Turkey or, if economics permit, east to China. Compared with transporting Caspian oil and gas along the north-south axis—that is, through Russia or Iran—such a corridor has several advantages. They include:

- Diversifying the Caspian countries' transport options, which are now highly reliant on Russia to a degree that is economically unwise and politically risky
- Bringing Caspian energy to markets without increasing the share of world energy that goes through the Strait of Hormuz
- Deepening ties between the Caspian states and NATO member Turkey, which has linguistic affinities with the three main energy exporters (Azerbaijan, Kazakhstan, and Turkmenistan)

The Caucasus region, through which the pipelines would have to transit, has several active armed conflicts, including that in Chechnya and that between Armenia and Azerbaijan. Nevertheless, the U.S. military role in the region is likely to remain strictly limited. Russian sensibilities about U.S. military activities there mean that an active U.S. role could end up being destabilizing as well as detrimental to the U.S. strategic relationship with Russia. The lack of any serious Western intention to em-

ploy military forces there leaves the Caspian region open to local forces and security dynamics. Whether the result is adequate stability remains to be seen. Some observers allege that a new Great Game is emerging in the Caspian region. This may be overstating the situation, but the region seems destined to be a source of political controversy for some time to come.

### ***Disagreements about Global Warming***

Because much of the world has become more industrialized and consumes more energy, greenhouse gas emissions have become a growing problem. As the need to control them has grown, so has controversy over proper policies. The 1997 Kyoto Protocol involves pledges by the industrial countries, Eastern Europe, and the FSU to reduce by 2008–2012 greenhouse gas emissions relative to 1990 by 5 percent on average. In the United States, 82 percent of greenhouse gas emissions come from energy-related activities. Something similar applies in most other industrial countries.

The Kyoto Protocol has been controversial in the United States, most especially because the Protocol does not limit carbon emissions from developing countries. DOE forecasts that carbon emissions from developing countries will triple between 1990 and 2020, increasing from 1.6 billion tons a year to 4.9 billion tons. By contrast, the Kyoto Protocol reduction target is 0.2 billion tons a year (from the 1990 base of 3.9 billion tons). Unlike the United States, many members of the Western democratic community argue that it is inappropriate to expect newly industrializing nations to share in the burden of limiting global emissions. However, in the absence of such steps, it may be extremely difficult to secure broad support within the United States for taking strong action.

This issue will continue being debated at a political level, but it also has practical consequences. It will affect the Armed Forces by increasing the pressure to limit the negative environmental impact of military operations. This could require considerable financial resources. The U.S. military might also face pressure to reduce its oil consumption, which was about 300 thousand barrels a day in fiscal year 1998.

### **Implications for U.S. Interests, Strategies, Policies, and Goals**

In the 1970s and 1980s, U.S. energy policy was primarily concerned with hedging against supply shocks. The events of 1999–2000 demonstrated the continuing potential for a supply shock: a modest reduction in output (by little more than 2 percent of world oil supply) led to a tripling of world oil prices between early 1999 and early 2000. At the same time, changes in the structure of the American economy have reduced the impact of such supply shocks and lessened the urgency of hedging against energy supply shocks. Whereas the oil price shock of 1973–1974 and again that of 1979–1980 caused a reduction in American output on the order of 2 percent of the gross national product (GNP) for a couple of years, the 1999–2000 tripling of oil prices had little noticeable impact on American growth. A larger supply shortfall, lasting longer and coming when the American economy is less robust, however, could have a much greater economic impact.

While concerns over supply shortfalls have diminished, those expressed over the environmental impact of energy have increased. Some problems associated with the energy industry have long been on the policy agenda, for instance, air quality. In the 1990s, the issue that grabbed attention was global warming caused by greenhouse gases, especially carbon dioxide.

The different concerns about energy could be addressed through three different policy approaches, each with distinctly different aspirations and priorities: enhanced environmental protection, increased reliance on market forces, and reduced dependence on imports. In addition to evaluating the costs and benefits of each approach, policy reviews should examine its impact on relations with allies and with potential adversaries.

### ***Enhanced Environmental Protection***

DOE estimates that meeting the Kyoto Protocol target for the United States in 2020 would require a 30 percent reduction in carbon emissions from what would prevail if current policy were not changed. An energy policy that focuses on achieving the Kyoto Protocol targets could include policies to reduce energy consumption and shift to less carbon-emitting fuels (for example, from coal to natural gas). As *A National Security Strategy for a New Century* states:

Conservation measures and research leading to greater energy efficiency and alternative fuels are a critical element of the U.S. strategy for energy security. Our research must continue to focus on developing highly energy-efficient buildings, appliances, and transportation and industrial systems, shifting them where possible to alternative or renewable fuels, such as hydrogen, fuel cell technology, ethanol, or methanol from biomass.

Taxing consumption would be an effective way to achieve reductions in greenhouse gas emissions, but it would have serious disadvantages. Gasoline taxes fall more heavily on some sectors, such as those in the less sparsely settled Western states, raising concerns about equity. Like other consumption taxes, energy taxes could fall more heavily on the poor; heating and fuel take up more of their income than is the case for the well-to-do. It is difficult to justify a large tax increase at a time when the United States is running a substantial budget surplus that is being used to ensure social security and pay down the national debt.

The domestic American debate about global warming has foreign policy implications. In the other industrial democracies, there is much broader support for far-reaching measures to reduce carbon emissions. Since emissions from any country affect what is an inherently global problem, the differences between the United States and the other members of the Western democratic community have been a source of tension. Exacerbating the problem has been that greenhouse gas emissions are much lower in the European Union and Japan than in the United States—a by-product of their greater reliance for energy security on reducing consumption, including through high taxation. Achieving consensus with the European Union and Japan on energy policy is not sufficient reason for the United States to adopt a consumption-limiting energy policy, but it would be a positive side effect.

### ***Increased Reliance on Market Forces***

A policy of greater reliance on market forces would include promoting openness to foreign energy investment in friendly states, making the U.S. Strategic Petroleum Reserve (SPR) a more usable instrument for responding to supply shocks, and using market mechanisms to achieve environmental goals at lowest cost. Such policies would be the most growth-promoting way to achieve energy security.

Several U.S. interests are well served when countries friendly to the United States allow foreign investment in oil production. American firms are well positioned to provide the equipment such investment would finance, American investors are well placed to profit from such investment, and the greater role of IOCs in the production process impedes cartel behavior by exporter governments. In recent years, IOC investment has become more welcome in a number of countries, such as Venezuela. The big prize, however, is the GCC states. Kuwait's government has proposed to its parliament a law allowing IOC investment in marginal oil fields that the Kuwaiti national oil company is not well positioned to operate. In 1998, Saudi Crown Prince Abdullah, the de facto ruler of that country owing to the King's disability, asked IOCs to submit ideas about what role they might play in developing Saudi oil and gas. The role of IOCs, however, remains highly controversial: nationalist sensibilities are offended by the need to rely on foreign finance and expertise. To allay suspicions that the IOCs are being allowed in only as a political favor to the United States, the U.S. Government could encourage the Western democratic governments to proclaim their commitment to an open process in which Gulf States make decisions on the basis of economic reasons rather than outside political influence.

The major difficulty in promoting more foreign investment in OPEC states is that some of those countries are not friendly to the United States; indeed, some might use the income from additional oil sales to finance a military buildup inimical to U.S. interests. The United States has comprehensive economic sanctions against Libya, Iran, and Iraq precisely because of concerns about these countries' aggressive actions, such as sponsorship of international terrorism and destabilization of their region. Iraq, which is under extensive United Nations (UN) sanctions, would like UN permission for foreign investment in its oil industry, but the United States has been leery. Because the U.S. Government has not found a way to reconcile its energy security interest in expanding foreign investment in OPEC oil with its national security interest in restricting foreign investment in these three countries, priority has been given to the national security interest.

Irrespective of what role IOCs play in OPEC production, the United States will need to maintain a reserve in the event of a supply shock. Acting through the International Energy Agency (IEA), 23 industrial countries have agreed that they will share among themselves the impact of a temporary shortfall. Each has a commitment to maintain strategic stocks for this purpose. The United States meets its obligations in large part through the SPR, a 570-million-barrel oil reserve stored in underground salt caverns along the Gulf of Mexico coast. It can be drawn down at a rate of 4.2 mbd, equal to about 40 percent of American oil imports. Authorized in 1975, the SPR inventory peaked, in terms of days of net imports, in 1985 at 115 days. Coverage has

diminished as imports have increased and 28 million barrels of SPR oil were sold in 1996–1997 to raise revenue for the Federal budget. No oil has been purchased since 1995. In 1998, the SPR inventory was equal to 60 days of imports. Until June 2000, the only emergency use of the SPR had occurred in January 1991, at the start of *Desert Storm*. The mere announcement of SPR sales had a considerable stabilizing effect on world markets. Only 17 million barrels were sold before market conditions returned to normal.

The SPR is caught in a bind. Many economists oppose using the SPR each time there is a supply shock and oil prices rise because they would prefer to let higher oil prices discourage consumption and encourage production. As a result, some analysts have suggested that the SPR should rarely be used. On the other hand, the June 2000 decision to release 1 million barrels from the SPR suggests that it may become a more active policy instrument. That release, given the political criticism that Clinton administration policies had contributed to a rapid run-up in Midwest gasoline prices, was in response to shipping/port accidents that temporarily impeded importing crude oil for two refineries in Louisiana, near a SPR storage area.

Rather than making the SPR a political football, an alternative policy would be to depoliticize it, as is done by the EU countries with their petroleum reserves. Depoliticization would entail using market signals to determine when SPR sales occur, namely, to sell SPR oil whenever there is backwardation. Backwardation—in which the price of oil for future delivery (on the future markets) is lower than the price of oil delivered today—is a sign that markets expect the price of oil to fall. In that case, sale of SPR oil would help reach lower prices more quickly. Furthermore, such sales could be matched with simultaneous contracts (on the futures market) to purchase oil in the future at a lower price. Through this mechanism, the amount of oil in the SPR could grow, without requiring taxpayer funds.

The disadvantage of selling SPR oil whenever there is backwardation would be if futures markets were wrong. If the supply shock continued (instead of ending as the futures market predicted), then the early sale of SPR oil would have depleted the reserve just when it was most needed. However, backwardation could generally be ended through the sale of a small part of the SPR. If ending backwardation requires use of most of the SPR, it is likely there would be a severe national emergency of the sort that would lead to a political decision to release the SPR.

Much as market forces could be used to provide energy security, so too could they advance environmental goals. Global warming could be addressed by using market forces to find the most efficient means to reduce global carbon emissions. As part of the process of implementing the Kyoto Protocol, discussions among the signatories continue on instituting a system of trading for carbon permits. Under such a system, a country that could achieve its target only at high cost could buy the right to emit a certain amount of carbon from another country that could exceed its target at low cost. Such a system would allow the United States to buy permits for a significant part of the needed reduction from the FSU countries, which could cut emissions from the 1990 levels at very low cost. However, the European Union and the United States differ about whether to place limits on the use of purchased emission credits to meet Kyoto Protocol targets. In May 1999, the European Union proposed a ceiling on

such credits; under the EU formula, the United States would be allowed to meet only one-third of its needed reduction through credits. The European Union and many developing countries remain suspicious about market mechanisms as a means to address environmental problems.

While the European Union and United States differ about carbon permits, they might be able to agree to encourage heavy energy-using countries to remove energy subsidies. The IEA estimates that ending the extensive subsidies on energy consumption in eight countries (Russia, Kazakhstan, China, India, Indonesia, Iran, Brazil, Venezuela, and South Africa) would cut global carbon dioxide emissions by 4.6 percent—more than the Kyoto Protocol would accomplish because its target of a 5 percent cut applies only to industrial countries.

### ***Reduced Dependence on Imports***

Economists may argue that free trade in energy is the wisest policy, but the heavy concentration of energy reserves in certain countries has made such a policy riskier than they may like to admit. The 1999–2000 experience demonstrates that markets can create conditions in which oil-exporting countries can raise prices substantially, imposing a cost on the American economy. The 1990–1991 Iraq-Kuwait crisis revealed the serious consequences of reliance on energy from the unstable Persian Gulf.

The United States could reduce its dependence on imported energy through policies that promote development of domestic energy resources and encourage more efficient use of energy. Promoting domestic energy production could mean more favorable tax treatment for oil and gas producers and the easing of environmental restrictions that put areas such as the Naval Petroleum Reserve in Alaska off limits to exploration. The U.S. Government could also encourage replacing oil in transportation with non-oil sources, along the lines of the current subsidy for plant-based ethanol. Coal liquefaction is a rapidly developing technology that might be competitive, if oil prices remain at the \$30 per barrel level of early 2000. But it is not likely to proceed quickly so long as the expectation is that prices will be substantially lower in the long run. There is much scope for more efficient use of energy. DOE estimates that systematic use of high technology—such as drag reduction, variable valve timing, and advanced low-resistance tires—could eventually cut 11 percent from energy consumption in transportation, nearly all of which is oil.

A policy of greater energy independence would cost more than would the use of imported energy, if that energy were priced at anything like a market-clearing level. The key question is whether the major oil-exporting countries can and will raise prices by restricting output. If political conditions are ripe for an effective cartel over the medium term, then a policy of reduced reliance on energy imports looks wiser. Even then, there is a paradox: the more the United States encourages domestic production, the greater the incentive for large oil exporters to drive the price down to make American production uncompetitive. Although lower prices are beneficial in the short term, greater energy independence would make strategic sense in the long term.

In addition to its economic implications, a U.S. policy that emphasizes energy independence could create complications in international security affairs. Such a policy would, in effect, leave other energy importers—including the European Union,

Japan, China, and India—to fend for themselves. That could lead them to approach energy suppliers such as Russia and the Gulf countries for political deals—deals that the United States could regard as unpalatable. In a worst case, China might decide to secure its energy import needs through a political alliance with an anti-Western government in Iraq or Iran (which China might provide with destabilizing weapons), combined with development of a blue-sea Chinese navy to protect its SLOCs. Even so, greater energy independence would enhance the strategic options available to the United States, which already faces serious vulnerabilities in the Gulf.

## Policy Conclusions and Recommendations

U.S. energy security policy must balance several important interests that are not always fully consistent: environmental protection, economic growth, and supply security. Some government policies advance all three interests: for instance, government encouragement of new technologies to increase energy efficiency and to move the transportation industry away from its heavy reliance on oil. Other government policies advance one or more of the interests without in any way impeding the other interests; for instance, an active management policy for the SPR, along the lines of the EU model, could increase the size of the SPR and contribute to oil price stability. However, there are many situations in which the environment, prosperity, and security will be at cross-purposes. The wisest course in such cases is to avoid extremes in any one direction. That is, the United States should neither concentrate on environmental protection to the exclusion of all else, nor blindly rely on market forces to solve all problems, nor seek full energy independence. The best policy mix would be designed to make moderate progress on all fronts.

The biggest problems in U.S. energy policy have come from extreme impulses in advancing one U.S. interest at too high a cost to other interests. For instance, progress on reducing greenhouse gas emissions has been held back by fervent insistence on too ambitious goals. That said, U.S. policy on energy issues has generally worked well. The U.S. Government has in place effective mechanisms for addressing energy issues. Energy is given ample priority in the national agenda; indeed, the United States is one of the few industrial democracies with a Cabinet-level energy ministry.

While on energy the U.S. Government is a strong supporter of globalization, it remains, as it should, unconvinced that globalization's market dynamics alone can guarantee full access to energy. Globalization has done much to provide a steady supply of energy at reasonable prices, but it cannot be relied on as the sole guarantor of energy security. Energy resources are too concentrated in one region (the Persian Gulf), global energy markets have too mixed a record (sometimes exacerbating instability instead of dampening it), and—most important—too many Gulf States are internally unstable, externally aggressive, and pursuing weapons of mass destruction. *A National Security Strategy for a New Century* states that “Conservation and energy research notwithstanding, the United States will continue to have a vital interest in ensuring access to foreign oil sources. We must continue to be mindful of the need for regional stability and security in key producing areas to ensure our access to, and

the free flow of, these resources.” Access to foreign oil is not only vital but also key to the health and vitality of the democratic community as a whole.

The most important difference within the Western democratic community about energy security will remain how to achieve and sustain stability in the Persian Gulf. The United States emphasizes the importance of containing Persian Gulf security threats—by maintaining a robust military capability to deter aggression and using economic sanctions to deprive aspiring WMD proliferators of resources and technology. The other Western democracies will put more emphasis on engagement, politically and commercially, with all countries, including troublesome countries. The optimistic interpretation is that this difference constitutes a division of labor, with the United States wielding the stick while Europe and Japan proffer the carrot. The pessimistic interpretation is that the differing policies undercut each other, with U.S.-supported sanctions and robust military presence impeding cooperation from the countries of concern while Europe’s engagement policy undermines the U.S. containment efforts.

While differences among the Western nations about energy policy will remain, much could be done to build on the commonalities within the Western democratic community. For example, all its members could cooperate in encouraging OPEC countries to open up to foreign investment in oil production. However, differences in approach are inevitable. It is not plausible that the United States will adopt the EU and Japanese approach of limiting energy consumption through heavy energy taxation. Nor is it likely that those countries will endorse the U.S. insistence that any restrictions on its greenhouse gas emissions be matched by action on emissions from developing nations. In the best of all worlds, the Western industrial democracies would decide on a common approach on all energy issues, including Persian Gulf security. In fact, repeated efforts to arrive at such a consensus have instead rubbed salt in the wound. Living with the problem is better than making it worse.

This means, for instance, efforts to avoid agonizing and divisive debates in forums such as the UN Security Council. While it would be nice to have the UN imprimatur on U.S. security actions in the Gulf, the political price necessary to achieve even ambiguous UN actions is too high to be worth paying. The key decisions about Gulf security should be made by those who bear its main burden, namely, the United States and Saudi Arabia, in consultation with important allies like Britain and Kuwait. The United States is fully capable of providing on its own the military muscle for the day-to-day defense of the Persian Gulf. Bearing that burden largely on America’s back—with a small British role and occasional contributions from other allies—is more appropriate than creating a crisis with U.S. allies over responsibility sharing.

The bottom line is simple. Reliance on international markets can help greatly in ensuring that the future supply of oil and other energy resources meets demand at acceptable price. But markets are not a stand-alone mechanism. Strong and effective government policies will be needed as well—especially by the United States. In a globalizing world, these issues will be with us for a long time to come. 🌐

## Notes

<sup>1</sup> The White House, *A National Security Strategy for a New Century* (Washington, DC: Government Printing Office, December 1999).

<sup>2</sup> Unless otherwise cited, all data in this chapter are from reports of the Energy Information Agency of the U.S. Department of Energy, available on the Internet at <<http://www.eia.doe.gov>>. The principal reports used were the *Annual Energy Outlook 2000* and *International Energy Outlook 2000*. An additional useful source is BP Amoco, *Statistical Review of World Energy June 1999*.