

Energy

and Environmental Insecurity

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U.S. Army (Karl Rottmagen)

Flame at oil refinery in Bayji, Iraq, burns 24 hours a day

Energy security is now a commanding priority. The emerging energy system is far more complex and global than the industrial era system it is slowly replacing. Today, when security planners talk about energy security, they are as likely referring to carbon emissions as to energy self-reliance and affordable oil. Moreover, the solutions that the international system has employed for over a century to secure its access to energy are becoming decreasingly effective. This article examines critical issues surrounding energy in the evolving security environment.

Emerging System

Energy has become one of the most pressing problems in national and global security. Over the last decade, significant increases in the price of oil have weakened the global economy, contributed to a sharp rise in global food prices, and transferred trillions of dollars to autocratic oil-exporting regimes. (Even in the midst of the current recession, oil costs around twice as much—in inflation-adjusted

dollars—as its historic median price.¹) Almost as harmful as the high price of oil, the rapid fluctuations in its price—from around \$25 per barrel in 2001 to almost \$150 in 2008—have discouraged investment in energy technology and infrastructure solutions such as new sources of renewable energy, ensuring that global markets will not be prepared for the next cycle of high prices.² Internationally, energy diplomacy has become increasingly confrontational as states jockey for control of gas and oil markets and pipelines. Meanwhile, concerns about pollution and greenhouse gases have strained diplomatic relations with other nations and are forcing fundamental changes in energy policy.³

The emerging crises described above are symptoms of a gradual transformation in the underlying geopolitical and economic system that has supplied the world with cheap energy for over a century. Since the 1800s, cheap

fossil fuels have powered the rise of industrialization and globalization. During this period, free-market mechanisms ensured that world markets had access to petroleum and other sources of energy. This system relied on competition to drive the price of energy commodities toward the price of extraction and depended on a liberal trading order in which governments generally left energy transportation, supply, and demand to the market.⁴

Over the life of the energy market, the fundamental threat to cheap and reliable energy commodities has been that government intervention in the supply, transport, and demand for energy would transform the global distribution system from one adjudicated mainly by markets to one based on politics and force. Threats to the market-based system have always been possible. States with diplomatic or military influence on the global lines of communication by

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which energy is transported have frequently been tempted to further their interests by charging rents for access. Supplying states have regularly attempted to band together to increase market prices.⁵ At least since the 1970s, environmental groups have put pressure on governments in rich states to look beyond the market and consider externalities when setting energy policy.

Despite these pressures, until recently the world has generally maintained a global free-market energy economy in which the prices of energy commodities have hovered around the cost of extraction and the supply has been dependable.⁶ Historically, this system has rested on three pillars:

- reliance on freedom of the seas for most international energy trade
- multiplicity of energy-exporting nations and multinational corporations that made collusion and nationalization difficult
- preference given by oil-importing nations to energy supply and price over considerations such as the environment.

Each of these pillars, and hence the basic energy system, is increasingly uncertain.

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parochial reasons. During the World Wars, Cold War, and Iran-Iraq war, belligerents used diplomatic and military power to interdict opponents' energy supplies. However, because most global energy commodities traveled by sea, and because Great Britain and the United States were dominant sea powers, their opponents' efforts were generally frustrated in war and free-market distribution mechanics persisted in times of peace.

In recent years, however, a number of events have begun to undermine freedom of energy transportation. Over the last two decades, natural gas has become an increasingly important part of Europe's energy economy, and Russia and Central Asian states have begun to supply a large portion of that resource. Unlike petroleum exports, which mainly travel across oceans to final

use its geographic proximity to and influence on Central Asian and Eastern European states to seek economic and diplomatic rents from natural gas exports.

Russia has routinely made use of its influence over energy supply routes. In January 2006, Moscow flexed its muscles by cutting off natural gas exports to Ukraine and did the same in 2007 to Georgia and Belarus.⁷ After Russia's intervention into Georgia in 2008, Russian leaders made it clear that opposition to Moscow could affect natural gas supplies.⁸ Russia's energy realpolitik has been effective. Major European states have regularly recoiled in the face of threats to their energy lifeline. Meanwhile, America's support for the free transport of gas in Central Asia and Eastern Europe has put it at odds with Russia.⁹

Supply lines have also become less secure in the Persian Gulf's narrow Strait of Hormuz through which 40 percent of global oil exports flow. As Iran amasses modern anti-air and anti-ship missiles and enhances its capacity for harassing tanker shipping, the United States assumes a riskier and costlier burden as guarantor of the freedom of the seas.¹⁰ In the longer term, China's growing dependence on Middle Eastern oil may heighten Beijing's concern about U.S. control of the sea lines of communication. These concerns have led it to expand its influence along the routes connecting the Arabian Gulf, Indian Ocean, Strait of Malacca, and South China Sea through a network of treaties, access to ports and airfields, and modernized military capabilities.¹¹ If global petroleum demand continues to outpace supplies, the temptation for regional powers to seek diplomatic and financial rents by controlling sea lines and chokepoints is likely to increase.

From Free Market to Oligopoly

For more than a century, global energy supply has been dominated by international corporations competing to find and extract energy resources for profit. The result has been that known reserves have expanded faster than demand, and prices have usually remained low. Petroleum, in particular, has averaged around \$20 per barrel in inflation-adjusted dollars for nearly a century.¹² While energy-exporting nations have attempted to coordinate their export policies to reduce supplies and increase prices, the large number of exporting states and the critical role inter-



Exercise Sector Guardian assesses Iraqi navy ability to defend oil platform in Persian Gulf

Insecure Energy Lines of Communication

Unimpeded transportation of energy has never been assured. Throughout the history of the modern energy market, states have attempted to influence transit routes for

buyers, natural gas must generally travel by pipelines through sovereign territory. The main geopolitical implications of overland transport are that the United States cannot use its maritime power to secure energy sea lines of communication and that Russia can

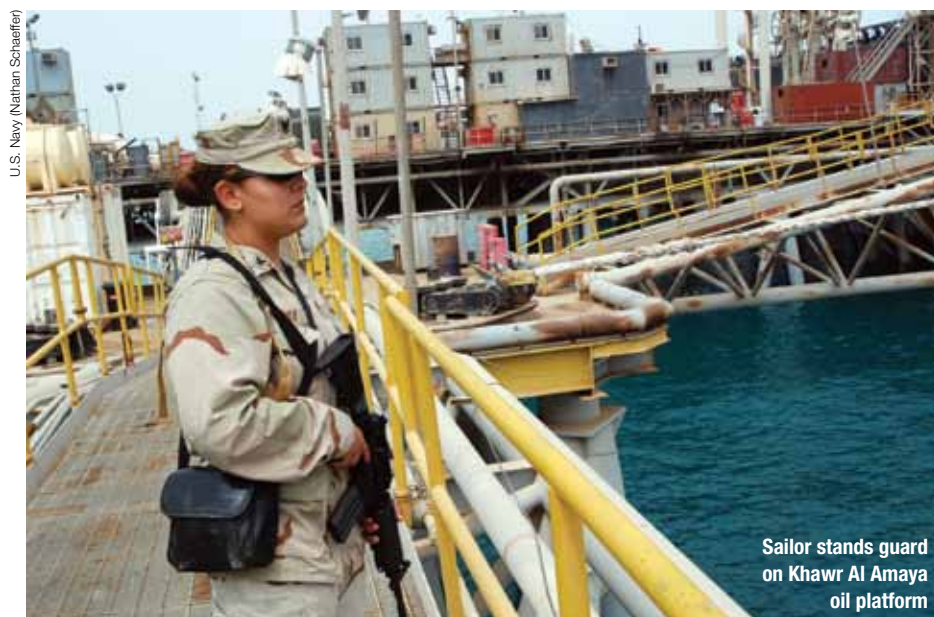
national corporations have played in providing technology and expertise have usually frustrated cartels.

The longstanding dynamics of the global energy market are changing. Known oil and gas reserves have become increasingly consolidated in the hands of a small clique of often politically unstable states.¹³ In four of the top eight reserve-holding nations—Iran, Iraq, Nigeria, and Venezuela—a combination of international sanctions, war, civil disorder, and corruption has reduced energy exploration and extraction below market expectations, diminishing supply and

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increasing prices.¹⁴ Over the same period, as extraction technology has spread from private companies to states, exporting countries have regularly nationalized their reserves and seized multinational oil and gas companies doing business within their territory.¹⁵ Whereas most reserves and nearly all major energy companies were once private, around 90 percent of all reserves are now under state control and a progressively larger number of oil and gas companies are partly or wholly owned by exporting governments.¹⁶

As this has happened, major importing powers have become keen to influence



Sailor stands guard on Khawr Al Amaya oil platform

supplying nations through diplomatic and military instruments of state power. The system that allocates energy internationally has become more mercantilist. China has vigorously attempted to use its newfound financial muscle to bring autocratic African and Central Asian oil-exporting regimes within its sphere of influence to bypass market mechanisms. Russian attempts to control the flow of energy in Central Asia and Eastern Europe have regularly escalated to energy blackmail and threat of force. Similarly, at least since the early 1990s, the United States has used various diplomatic tools, including military-to-military contacts, with regimes in Central Asia and the Middle East to increase their connections with the West.¹⁷

The net effect of these changes has been to reduce the amount of gas and oil on the international market—resulting in tight supplies—and to move the market toward oligopoly. The emerging system is less stable and less predictable than the older market-driven system. In the old system, the large number of competing energy-supplying states and companies dampened the effects of actions by particular suppliers and inhibited the ability of suppliers to coordinate policy. In the new system, market supply is increasingly dependent on the nuances and preferences of individual states. Recently, even apparently trivial political events in exporting nations have been enough to cause dramatic fluctuations in prices, and the United States has, on occasion, been reduced to cajoling Saudi Arabia and other major exporters to increase energy supplies to reduce market prices.¹⁸ From the viewpoint of the emerging autocratic oil-exporting oligarchy, the system works. Before the current recession, it funneled trillions of dollars into their economies and increased their political power at home and diplomatic power abroad. According to most analyses, this situation will return when the recession ends. There is little reason to expect the current trend toward oligarchy to reverse itself or anticipate a return to the more competitive energy environment of the 20th century.

Diminishing Importance of Price

The third dynamic altering the current global energy market is the increasing importance of environmental concerns in determining importing states' energy policies. Whereas



German frigate *Mecklenburg-Vorpommern* sails Strait of Hormuz near USS *Vella Gulf*

energy policies in rich states were once determined mainly with an eye to reducing price, today price is becoming less important vis-à-vis fears of pollution and particularly of global warming.¹⁹

For several decades, the governments of rich countries have been under mounting pressure to modify energy policies to account for environmental factors. The success at influencing governments over the environment has varied across countries and time. But the contemporary era is particularly green, and the influence of environmental groups is growing rapidly. While clashes once mainly pitted naturalists against economic interests, as concerns about global climate change grow, the number and political influence of groups committed to environmental policies are expanding. Today, many governments and nongovernmental organizations are lobbying the United States for more eco-friendly policies, and U.S. energy policy has become a major point of diplomatic, as well as domestic, friction.

It is difficult to predict the effect of environmental concerns on energy markets. In general, environmentalists argue for higher prices on carbon-based fuels to reduce demand. However, environmental science is too young and lobbying too disparate to make prediction easy. In the United States, conflicting interests sometimes pit one environmental interest against another. For instance, lobbies aimed at reducing radioactive waste and preserving natural ecosystems currently restrict the construction of U.S. nuclear and hydroelectric plants. As a result, however, the country has relied on dirty, carbon-producing coal plants.

Also, some policies are self-defeating. To reduce greenhouse gases, the United States funds research on electric cars. However, since 50 percent of U.S. electricity is derived from coal, depending on a number of factors, electric cars can produce more carbon and other pollutants per mile than cars running on regular gasoline.²⁰ In addition, some policies have unintended consequences. Recent legislation that prevents government use of new fuels that emit more carbon across their life cycle than petroleum appeared relatively benign when low oil prices made North America's vast reserves of unconventional fossil fuels unprofitable to extract and refine. However, when high prices made these reserves profitable in 2008, the situation changed significantly.²¹ In the meantime, environmentalists and energy suppliers both

hold out hope that new technology will eventually solve current problems.

Environmental concerns, and particularly global climate change, may prove to be this century's greatest security challenge. Whatever the eventual outcome, however, they are fundamentally changing the way the global system extracts, transports, and uses energy and are injecting uncertainty into global markets. As concerns over climate change increase with time and governments

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search among myriad proposed solutions, the price and volatility of energy are likely to increase and incentives for privately funded research and infrastructure development are likely to be adversely affected.

As the global energy economy transitions toward a more statist and mercantilist system, policymakers are likely to find themselves operating in terra incognita. In the old system, private companies absorbed most of the risk; in the emerging system, states will bear a larger portion of the risk as they pioneer new policies. Many of the policies that will set the tenor for the next century will be developed and implemented in the next decade. Global leadership is needed, and difficult national choices will have to be made. The world is changing and the dynamics that facilitated a world powered by cheap fossil fuels are diminishing. Leaders face the question of whether they can overcome inertia and adapt with it. **JFQ**

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