

Oil Dependence

A Threat to U.S. Economic & National Security



Securing America's
Future Energy

Executive Summary

America's Oil Dependence

Oil is the lifeblood of the American economy, providing more than 40 percent of all energy consumed in the United States and 97 percent of the energy used for transportation.¹

Increasing Reliance on the Middle East

The world will increasingly depend on Middle East OPEC nations to supply the oil needed to meet future demand—which is expected to grow to 110 million barrels per day (mbd) by 2025.²

A National Imperative

Oil dependence endangers U.S. economic and national security. In addition to hundreds of billions of dollars each year in direct costs, oil dependence feeds the growth of Islamist terrorism; provides vast amounts of money to unstable, undemocratic governments; increases the likelihood of international conflict; puts American troops in harm's way; and exposes Americans to the risk of severe economic dislocation. For example:

- Al Qaeda has targeted and continues to target oil infrastructure as a way of “bleeding” the U.S. economy. Numerous key chokepoints along the oil supply and distribution chain are predisposed to accidents, piracy, or terrorism, and the effects of a major attack at one of these points could devastate the global economy.
- Oil's influence on U.S. foreign policy puts considerable leverage in the hands of hostile powers and undemocratic regimes and weakens our capacity to prevail in the war on terrorism.
- Growing demand for oil could heighten geopolitical tensions and spark international conflict.
- Transfers of national wealth to foreign oil producers account for approximately one-third of the U.S. current account deficit, which soared to \$792 billion in 2005.³
- Terrorism, natural disasters, and numerous other plausible events could interrupt global supplies and send prices sharply higher, threatening the stability of the global economy.

History provides ample evidence of the potential economic consequences of oil dependence. At best, short term measures offer limited protection against the effects of oil supply disruptions, but there are long-term policy options available that would significantly reduce our exposure to the tremendous costs and potentially devastating effects of oil dependence. *It is these long-term reforms that must be implemented to improve U.S. economic and national security.*

¹ Department of Energy (DOE), Energy Information Administration (EIA), Office of Integrated Analysis and Forecasting, “Annual Energy Outlook 2006,” (February 2006), Table A2. Henceforth cited as *AEO* (2006).

² DOE, EIA, Office of Integrated Analysis and Forecasting, “International Energy Outlook 2006,” (2006), Table A4. Henceforth cited as *IEO* (2006).

³ Department of Commerce, Bureau of Economic Analysis, “U.S. International Transactions Accounts Data,” Table 1, http://www.bea.gov/bea/international/bp_web/simple.cfm?anon=71&table_id=1&area_id=3, accessed 27 Nov 2006.

America's Oil Dependence

Oil is the lifeblood of the American economy, providing more than 40% of all energy consumed in the United States and 97% of the energy used for transportation. For the last quarter century, the U.S. economy has been relatively insulated from the potentially devastating consequences of this dependence thanks to global spare production capacity and surplus conditions. U.S. energy policy has focused on increasing and diversifying supply, establishing strategic reserves, and relying on Saudi Arabia to moderate oil prices.

Today, however, surplus conditions are fading fast. Spare production capacity is at its lowest level in three decades, with most estimates currently between 1 and 2 million barrels per day (mbd)—very little in a world that consumes approximately 84 mbd.⁴ Though world production may not peak anytime soon, the production system is under considerable strain—creating a tremendous amount of risk to the global economy.

Increasing Global Demand, Increasing Reliance on the Middle East

*The United States is the world's largest consumer of oil, accounting for 25 percent of global daily demand despite holding less than 3 percent of the world's proven reserves.*⁵

- Oil imports presently account for more than 70 percent of total U.S. consumption—a share that will only increase as U.S. demand grows by a projected 24 percent (from 21 mbd to 26 mbd) between 2006 and 2025.⁶
- Over the same period, world demand is projected to increase by 33 percent—from 84 mbd to 110 mbd—driven largely by developing countries such as China and India.⁷

The world will increasingly depend on Middle East OPEC nations to supply the oil needed to meet future demand.

- The Middle East currently holds more than 66 percent of the world's proved oil reserves and supplies 30 percent of the world's oil.⁸
- Saudi Arabia, home to 24 percent of the world's proved reserves, will remain the world's largest exporter for the foreseeable future.⁹

⁴ IEO (2006), Table A4. Figure extrapolated from table data; DOE, EIA, "Short Term Energy Outlook," (November 2006), Table 3a, <http://www.eia.doe.gov/emeu/steo/pub/3atab.html>, accessed 28 Nov 2006.

⁵ IEO (2006), Table A4; DOE, EIA, "International Energy Annual 2004," (2006), Table 8.1, <http://www.eia.doe.gov/iea>, accessed 27 Nov 2006.

⁶ AEO (2006), Table A1; IEO (2006), Table A4. Some figures extrapolated from table data.

⁷ IEO (2006), Table A4.

⁸ DOE, EIA, "International Energy Annual 2004," (2006), Table 8.1, <http://www.eia.doe.gov/iea>, accessed 27 Nov 2006.

⁹ Ibid.

- Historically, global markets have relied on Saudi Arabia to act as the “swing producer” to moderate prices and offset supply volatility, but current spare production capacity in Saudi Arabia is much lower than in the past. Most analysts estimate that Saudi spare capacity is now only between 1 and 2 mbd.

A National Imperative

Oil dependence endangers U.S. economic and national security. In addition to hundreds of billions of dollars each year in direct costs, oil dependence feeds the growth of Islamist terrorism; provides vast amounts of money to unstable, undemocratic governments; increases the likelihood of international conflict; puts American troops in harm’s way; and exposes Americans to the risk of severe economic dislocation. For example:

Terrorism

Al Qaeda has targeted and continues to target oil infrastructure as a way of “bleeding” the U.S. economy. Along the oil supply and distribution chain, numerous chokepoints are vulnerable to attack. Shipping lanes are of particular concern:

- Roughly 90 percent of Middle East oil exports pass through the Strait of Hormuz (17 mbd), Bab el Mandeb (3.0 mbd), or the Suez Canal/Sumed pipeline (3.8 mbd)—passageways with limited alternatives.¹⁰
- Another 11.7 mbd pass through the Strait of Malacca and 3.1 mbd through the Turkish Straits.
- Each of these passageways is vulnerable to accidents, piracy, or terrorism, and the effects of a major attack at one of these points could devastate the global economy.

Some oil-rich families fund terrorist groups, and the Saudi government has spent tens of billions of dollars over the last three decades spreading Wahhabism—an intolerant ideology that lays the groundwork for a broad doctrine of hatred, especially against the West.

Oil Constrains U.S. Foreign Policy

Oil’s influence on U.S. foreign policy puts considerable leverage in the hands of hostile powers and undemocratic regimes. In addition, close ties with corrupt and repressive governments impede America’s ability to encourage political liberalization and democratization—weakening our capacity to combat violent extremism.

¹⁰ DOE, EIA, “World Oil Transit Chokepoints,” (November 2005), http://www.eia.doe.gov/emeu/cabs/World_Oil_Transit_Chokepoints/Background.html, accessed 27 Nov 2006.; DOE, EIA, “Persian Gulf Oil and Gas Exports Fact Sheet,” (September 2004), <http://www.eia.doe.gov/emeu/cabs/pgulf.html>, accessed 27 Nov 2006.

Oil revenues have allowed many producing states to avoid the development of democratic political institutions, strong private sectors and secular education systems. The result has been slow economic growth and high unemployment, which in turn produces intense domestic tension. Dissatisfied populations threaten internal stability and become pools for terrorist recruitment.

International Conflict

There will be an increased likelihood of international conflict as demand for oil increases. Growing global demand is already intensifying competition to secure access to oil, worsening existing tensions and creating new rivalries—often contrary to U.S. interests. China’s resistance to U.N. action regarding the crisis in Darfur and Iran’s nuclear program are just two examples of this trend.

Military Cost and Risk

The need to secure global oil supplies requires substantial defense expenditures and involves significant risks to American forces—none of which are factored into the market price of a barrel of oil.

- CENTCOM troops ensure “unfettered access” to oil supplies in the Middle East.
- SOUTHCOM troops defend Colombia’s Cano Limón pipeline.
- EUCOM soldiers are training locals to guard the Baku-Tbilisi-Ceyhan pipeline and working to curb corruption and improve the security of facilities in West Africa.
- PACOM ships and planes patrol tanker routes in the Indian Ocean, the South China Sea, and the Western Pacific.

Wealth Transfers and Financial Instability

Over the last three decades, transfers of national wealth to foreign oil producers have totaled more than \$1 trillion.

- These wealth transfers are not all “loss” for the U.S.—many “petrodollars” are reinvested into the U.S. economy—but they account for approximately one-third of the U.S. current account deficit, a growing liability that contributes to the erosion of the dollar’s value.
- In 2005, the current account deficit increased to \$792 billion (up from \$665 billion in 2004) largely due to soaring expenditures on oil imports which exacerbated the growing deficit on goods.¹¹

¹¹ Department of Commerce, Bureau of Economic Analysis, “U.S. International Transactions Accounts Data,” Table 1, http://www.bea.gov/bea/international/bp_web/simple.cfm?anon=71&table_id=1&area_id=3, accessed 27 Nov 2006.

Exposure to Oil Price Shocks

According to the International Energy Agency's *World Energy Outlook 2004*, the world's increased dependence on oil from unstable regions means that the "vulnerability to a price shock induced by oil-supply disruption will increase." Essentially, oil dependence means that the condition of the global economy hinges on the ability of oil producers to keep the oil flowing.

Demand for oil is "demand inelastic" because there are no ready substitutes for oil and consumers have little flexibility to switch to other fuels for their daily oil consuming activities (such as transportation). When this reliance on oil is combined with tight supply conditions and growing oil demand, even relatively small shortages in supply can lead to sudden and large rises in the price of oil and have wide ranging ramifications for the economy. (As a rule of thumb, every 10% increase in the price of oil lowers U.S. GDP growth by up to 0.1 percentage points.) As Alan Greenspan noted before the Joint Economic Committee in April in 2002, "all economic downturns in the United States since 1973... have been preceded by sharp increases in the price of oil."

Numerous plausible events could interrupt global oil supplies and send prices sharply higher, threatening the stability of the global economy:

- *Saudi Arabia* is rife with terrorist threats and political tensions. Though the Kingdom has improved the security of its energy infrastructure since a wave of violence that began in May 2003, great concern remains. Two-thirds of Saudi oil output is processed in one huge facility (Abqaiq), the vast majority of Saudi exports are shipped from one of three terminals (Ras Tanura, Ras al-Ju'aymah, and Yanbu), and more than 50% of reserves are held in just eight fields, including the super giant Ghawar field, the largest in the world, which accounts for about 50% of Saudi Arabia's total oil production capacity.¹²
- *Iran*, the world's fourth largest oil producer and exporter, has threatened to use the "oil weapon" to retaliate against action taken in response to its nuclear program.
- *Nigeria* is the site of ongoing civil conflict. In March of 2003, oil companies removed staff and suspended production in the Niger Delta, shutting in 10-20% of the country's production. In September of 2005, Chevron temporarily shut down a pumping station and Shell evacuated personnel due to threats from local militia.
- In *Iraq*, oil facilities are a favorite target of the insurgency. There is also fear that violence could spill over into neighboring countries.
- *Venezuela's* president frequently threatens to "cut off the oil," and draws attention to the likely economic consequences for the U.S. In late-2002 and early-2003, labor strikes and general unrest reduced Venezuela's output by more than 60 percent.

¹² DOE, EIA, "Saudi Arabia Country Analysis Brief," (August 2005), <http://www.eia.doe.gov/emeu/cabs/saudi.html>, accessed 27 Nov 2006.

- *Al Qaeda* calls oil “the artery of the life of the crusader nation” and is actively targeting the vast and vulnerable oil supply chain.
- In *Russia*, the world’s second largest producer and exporter, uncertainty remains in the wake of the Yukos affair and other recentralization efforts.
- *FSU* states are the site of frequent instability (e.g. revolutions in Georgia, Ukraine, Uzbekistan), ethnic conflict, and rampant corruption.
- The precarious balance between supply and demand will continue to strain the system and infrastructure will always be vulnerable to *natural disasters*. Indeed, hurricanes were responsible for the single largest losses of energy output in 2004 (Ivan) and 2005 (Katrina).

History provides ample evidence of the potential economic consequences of oil dependence. From 1970–2000, oil shocks are estimated to have cost the U.S. economy an estimated \$7 trillion (in 1998 dollars).¹³

In 1973, the Arab oil embargo had a macroeconomic effect akin to those that would result from a simultaneous increase in consumer and businesses taxes.

- Consumption and investment slowed everywhere as the world economy was thrown into recession;
- Roughly a year after the embargo had begun, real gross national product (GNP) had declined at a rate of 7.5% per annum.¹⁴
- Schools and offices were closed to save on heating oil and factories were forced to lay off workers and cut production;
- Current account deficits soared and central banks cut interest rates to encourage growth;

In the aftermath of the oil shock associated with the Iranian Revolution in 1979, quarterly GDP growth in the following year remained low and decreased by as much as 7.8 percent in the second quarter of 1980 (annualized in 2000 dollars). Oil prices spiked and American consumers switched in droves to purchasing smaller, imported cars, causing the U.S. auto industry to suffer tremendously.¹⁵

The doubling of oil prices between 2003 and 2005 had a stalling effect on American employment and wage growth. On the whole, however, the economy was resilient because it was in a better position to weather high oil prices than in the past. Rising prices cause less damage today because the U.S. economy is half as energy intensive as it was in the 1970s, meaning it takes half as many Btu’s of energy to produce \$1 of GDP. The moderate prices of other goods, falling long-term interest rates and rising home values also

¹³ DOE, Oak Ridge National Laboratory (ORNL), David L. Greene and Nataliya I. Tishchishyna, “Costs of Oil Dependence: a 2000 update,” (May 2000), 1.

¹⁴ The Congress of the United States, Congressional Budget Office, “Managing Oil Disruptions: Issues and Policy Option,” (September 1981), 3.

¹⁵ Department of Commerce, Bureau of Economic Analysis, “Gross Domestic Product: percent change from preceding period,” (27 October 2006), <http://www.bea.gov/bea/dn/gdpchg.xls>, accessed 28 Nov 2006.

made it easier to absorb higher energy prices. Moreover, prices increased gradually, whereas an abrupt price spike would have had a much greater impact. However, given the tight balance of today's market, even a modest supply disruption could result in a dramatic rise in the price of oil.

In August of 2005, Hurricane Katrina severely damaged much of the oil infrastructure in the Gulf of Mexico, temporarily shutting in production and sending oil prices soaring. The national average for retail gasoline rose to almost \$3.00 and the impact was immediate:

- Airlines, with annual losses expected to reach \$6 billion, began cutting routes and raising domestic fares as their fuel bills increased by more than a third;
- Public transportation systems nationwide were forced to consider layoffs and higher fares to help offset an expected \$750 million increase in fuel bills;
- Schools had to re-budget and consider cutting after-school programs;
- Despite continued heavy discounting, car purchases (which were at near-record levels in July) collapsed in August and stayed low in September. Conditions worsened for domestic automakers in October, with GM, Ford and Chrysler reporting their lowest shares ever of the American market;
- U.S. consumer confidence experienced its greatest monthly drop in more than a decade and sales figures showed that consumers were avoiding nonessential purchases even though businesses were not passing on the full cost of higher energy prices;
- GDP growth in the fourth quarter of 2005 was just 1.8 percent (annualized), compared to an average annualized growth rate of 3.4% in the previous four quarters.¹⁶

In many ways, Hurricane Katrina was merely a prelude to the type of oil supply disruption we could face in the future. Recent crisis simulations developed by oil and national security experts illustrate some of the numerous scenarios in which plausible world events could send oil prices soaring to unprecedented levels.

Oil ShockWave, a crisis simulation developed to explore the vulnerability of the global energy system, showed that even relatively small supply disruptions can cause the price of oil to rise dramatically.

- In one exercise, a roughly 4 percent global shortfall in daily supply caused a 177 percent increase in the price of oil. As a result, consumer spending plunged, GDP dropped, and the economy went into recession. The current account deficit rose to unprecedented levels and there was an historically significant decline in the S&P 500.

¹⁶ Ibid.

Oil ShockWave simulations conducted in a variety of settings have demonstrated that the United States is not currently able to respond effectively to an oil supply crisis.

- Simulation participants, including current and former senior government and defense officials, have found that military intervention is infeasible.
- The Strategic Petroleum Reserve (SPR) might offer some protection against a major supply disruption, but this protection would be limited in scope and duration. Other emergency measures, like mandated demand reductions, are generally not sustainable for more than a few months to a year.

A number of long-term policy options, however, are available that would significantly reduce our exposure to the tremendous costs and potentially devastating effects of oil dependence. *It is these long-term reforms that must be implemented to improve U.S. economic and national security.*