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Can the United States Shed Its Oil Addiction?

Since the 1950s, U.S. energy consumption, mainly driven by the transportation sector and fed by oil, has almost tripled. Because the cultivation of domestic resources has not been able to keep up with demand, the United States has become increasingly dependent on energy supplies from unstable regions of the world. The costs and risks to national security provide the first major incentive for a readjustment of U.S. energy policy. U.S. dependency on foreign energy creates immense economic challenges and vulnerabilities as well. One-third of the skyrocketing U.S. trade deficit can be attributed to increased costs of imported oil. This is not a critical problem as long as U.S. trading partners continue to reinvest their returns in the United States. If U.S. productivity and economic power were seriously harmed by a lack of supply or by soaring prices, however, investors might seek different havens for their investments. This shift would put the dollar and the U.S. economy under considerable strain. Finally, growing public awareness about climate change and its dire consequences for people and the economy is increasing the political pressure to find more efficient alternatives to an outdated economy that relies on fossil fuels.

In his 2006 State of the Union address, President George W. Bush highlighted what he called "a serious problem," namely the United States' addiction to oil, "which is often imported from unstable parts of the world."[1] Despite that statement, not much political capital has been spent on solving the problem. The pessimistic conventional wisdom in the United States is that the "prospects for serious energy security reform will remain weak, unless

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there is a serious shock of the international system."[2] Path dependencies of the political system have so far prevented an active development and use of renewable energy, despite substantial support among the American public on this issue. Security, economic, and environmental factors, however, give U.S. policymakers strong incentives to lead the country into a renewable-energy future. Instead of competing with rising powers for the scarce fossil energy resources of the past, the United States could put itself in a much stronger position by leading the way in cultivating the alternative fuels and energy technologies of the future.

The Costs of Oil Addiction

With only 5 percent of total world population, the United States consumes almost one-quarter (22.5 percent) of global energy.[3] In the last 55 years, energy consumption in the United States has almost tripled, with this increasing demand being satisfied mostly by oil. In 2005, petroleum provided more than 40 percent of total U.S. energy consumption. Although the exploitation of gas and coal increased slightly in the 1970s, since the 1980s their contribution to energy consumption has remained constant at 25 percent and 20 percent, respectively.

Domestic oil production has not kept up with increased demand. Although the United States has managed to boost oil production from 5.9 million barrels per day in 1950 to 7.8 million barrels per day in 2005, this is not sufficient considering the daily need of 20.7 million barrels, two-thirds of which is consumed by the transportation sector.[4] Given the U.S. transportation system's dependency on liquid fuels and the time it would take to develop a market for new technologies, a Council on Foreign Relations task force predicted that "the United States will depend on imported oil ... for at least several decades."[5]

The superpower's dependency on foreign oil has markedly increased during the past decades. In 1950 the United States was still self-reliant, running on its own resources. Fifty years later, more than 60 percent of the oil consumed in the United States is delivered from abroad, and the trend shows no signs of abating in the future. Reliance on foreign-sourced fossil fuels poses a threat to U.S. national security and creates economic vulnerabilities as well as environmental challenges.

Risky Geopolitics

If the United States continues its overreliance on fossil fuels, it will become increasingly dependent on producing nations that are unstable and that pose a risk to its interests and could come into conflict with other consumer states.

Although the United States can still count on Canada and Mexico, which are its two most important petroleum providers, its tense relationship with Venezuela illustrates the challenges in securing energy resources even in its own backyard, let alone the Middle East and other volatile areas. Some observers of petropolitics go as far as to describe an "axis of oil" (Russia, China, and eventually Iran) at work that is "acting as a counterweight to American hegemony" and will deprive the United States of its oil supplies and strategic interests.[6]

More than 60 percent of the oil consumed in the U.S. is delivered from abroad.

The Persian Gulf, another region the United States used to dominate, has become very volatile and unreliable in terms of delivering energy resources. This region will continue to be vital to U.S. interests in reliable oil supply for at least the next two decades.[7] The U.S.–Saudi Arabian relationship in particular is well rooted in bilateral economic and political ties. The Saudi monarchy possesses the world's largest oil reserves and is one of the United States' main suppliers of oil. U.S. energy dependence, however, undermines the U.S. National Security Strategy's aim of fighting terrorism by demanding meaningful political reform from authoritarian regimes to become more democratic and market oriented.[8] Through interventions in the markets, Saudi Arabia has helped the United States to stabilize the price of oil, allowing oil consumers to enjoy relatively steady prices from the mid-1980s to 2003. Nevertheless, because oil production has not kept pace with increased worldwide demand for oil, especially from the United States and China, there has been a sharp increase in the price of oil over the past three years.

Although the cultivation of Saudi oil remains more or less under Riyadh's control, Saudi Arabia has been trying to attract foreign investors to exploit its gas reserves as well, which are estimated to be the world's fourth largest. The monarchy is fostering strategic partnerships, in particular with Russia, the holder of the world's largest proved natural gas reserves, and China, both of which are competing with the United States for regional and global influence.[9] On his last visit to Saudi Arabia, President Vladimir Putin emphasized that Russia and Saudi Arabia are the world's leading energy producers and exporters and that it would be "easy" for the two countries "to find common ground."[10] King Abdullah, for his part, pointed out that Russia and Saudi Arabia not only enjoy "huge economic potentials, vast natural resources, and a variety of investment opportunities" but also "huge political influence at the world stage," which will contribute to taking their "mutual cooperation to new heights within a strategic perspective." China's competition for access challenges the rules-based international order for energy trade and investment

championed by the United States. Chinese and Russian engagement creates new commercial and security options for energy-exporting states in the Middle East, including regimes that are at odds with U.S. interests.

By eliminating Saddam Hussein's regime in 2003 and failing to control the situation in Iraq, the United States has not only weakened its regional dominance but also shot itself in the foot economically. Instability in Iraq prevents the exploitation of one of the world's best long-term, high-yield oil resources, which could have been helpful for that country's reconstruction and for stabilizing global oil prices.

OPEC's power will be significant in the long term.

Iran, bolstered by the disaster in Iraq, possesses the world's third-largest proven oil reserves and controls the Strait of Hormuz, an important strategic choke point. Iran has troops stationed on an island near the strait's entrance and could disrupt the transit of about 17 million barrels of oil per day, which amounts to 40 percent of the world's oil trade.[11] Iran's use of its oil weapon could cause a significant increase in oil prices and damage to Western and Asian economies. Tehran has also sought to cultivate economic and military ties with Russia and China. In March 2004, China signed a $100 million deal with Iran to import liquefied natural gas in exchange for Chinese investment in Iran's oil and gas exploration and pipeline infrastructure. According to an unclassified 2003 CIA report, "Ballistic missile-related cooperation from entities in the former Soviet Union, North Korea, and China over the years has helped Iran move toward its goal of becoming self-sufficient in the production of ballistic missiles."[12] Chinese and Russian economic and strategic interests have contributed to undermine U.S. efforts to impose meaningful sanctions by the UN Security Council to solve the Iranian nuclear issue.

Given these difficulties in the Persian Gulf region, it is no surprise that the United States has been looking for alternative providers of oil. As early as May 2001, the National Energy Policy Development Group, created by executive order and chaired by Vice President Dick Cheney, stated that "West Africa is expected to be one of [the] fastest-growing sources of oil and gas for the American market."[13] The 2002 National Security Strategy reiterated this interest: "We will strengthen our own energy security and … expand the sources and types of global energy supplied, especially in the Western Hemisphere, Africa, Central Asia, and the Caspian region."[14]

The U.S. military's Africa Command (AFRICOM) is expected to be established by September 2008. AFRICOM, for the time being a subunified command of European Command (EUCOM), will serve as another base in the global war against terrorism. There is a growing perception that its primary

mission is to secure access to the oil and gas resources of African countries, which has been substantiated by EUCOM commander General Bantz Craddock, who told journalists in Washington, "You look at West Africa and the Gulf of Guinea, it becomes more focused because of the energy situation," with the result that protecting energy assets "obviously is out in front."[15]

The United States currently obtains 15 percent of its imported oil from sub-Saharan Africa, most of it from Nigeria, and intends to increase oil imports from Africa to one-quarter of its total imports by 2015. This significant increase seems plausible given that U.S. government projections estimate that the largest change in regional production will materialize for suppliers in Africa and the Middle East that are not members of the Organization of the Petroleum Exporting Countries (OPEC). These suppliers are predicted to increase their share of the world total from 6 percent in 2005 to 11 percent in 2030.[16]

Other powers with global aspirations are also aware of this potential, turning the African continent into another arena of global competition for fossil fuels. China is especially keen to lock up oil supplies with bilateral deals with countries such as Sudan. Beijing does not mix business with politics, and its engagement with African leaders is devoid of any discussion of human rights, rule of law, and other complications that might deter other countries.

Central Asia, previously seen as Russia's backyard, is now another region of great strategic significance to other great powers. Kazakhstan has increased its energy resource production markedly since the late 1990s, and in 2005 it delivered two-thirds of regional crude oil supply, followed by Azerbaijan (22 percent) and Turkmenistan (10 percent). The Caspian region produced 2 percent of total world oil output in 2005, which makes it a significant but not major supplier of crude oil to world markets.[17] In order to free hydrocarbon-rich Kazakhstan from Russia's infrastructure and dominance as well as to circumvent Iran, the United States pushed for the construction of the Baku-Tbilisi-Ceyhan pipeline, which routes Caspian oil through Azerbaijan, Georgia, and Turkey and began transporting oil in 2005.

During a visit in May 2006, Cheney expressed his admiration for what had been accomplished economically and politically in Kazakhstan. He embraced President Nursultan Nazarbayev as a personal friend, affirmed the "strong ties" between Kazakhstan and the United States, and expressed the United States' pride to be Kazakhstan's "strategic partner."[18] Given Kyrgyzstan's musings of giving in to Russian pressure to evict the United States from the Manas air base and to limit U.S. access to Kazakhstan's oil supplies, the United States is seeking to reaffirm its presence in Kazakhstan. China has meanwhile begun building a pipeline from the recently discovered Kashagan oil field in the Caspian Sea region.

In addition to its oil ambitions, China wants to avoid encirclement by U.S. forces. China is the biggest buyer of Russian military hardware, increasingly relies on Russian energy resources, and shares Russia's interest in rolling back U.S. influence in Central Asia. Since 2003, Moscow has been reasserting its power in its geopolitical backyard by cooperating with autocratic regimes in the region at the expense of U.S. democratization efforts and economic interests.

The United States has traditionally had a good relationship with Venezuela, due in no small part to Venezuela being the fourth-largest supplier of oil to the U.S. market. The U.S. government's relationship with President Hugo Chávez, however, has been quite tense, especially since 2005 when Venezuela cancelled its cooperation with the U.S. Drug Enforcement Administration and terminated a bilateral military-exchange program. On the domestic front, right after Chávez's election victory in 1998, the Venezuelan government tightened control by "renationalizing" its resources and has threatened at times, as it did in April 2004, to stop delivering oil to the United States. Venezuela has attempted to diversify its oil markets with Chinese buyers in mind.

Americans are ready to take and pay for action to reduce global warming.

Venezuela and Iran are close partners in the powerful OPEC, and Caracas has also cultivated a cooperative relationship with Beijing. Iranian experts reportedly assisted Petroleos de Venezuela, Venezuela's state oil company, to improve its access to Asian oil markets.[19] During Chávez's visit to Beijing in December 2004 and Chinese vice president Zeng Qinghong's visit to Venezuela in January 2005, China and Venezuela signed agreements that committed the China Petroleum Corporation to invest $410 million in developing Venezuelan oil and gas reserves. Placing his energy resources "at the disposal of the great Chinese fatherland," Chávez seeks to "free" his country from "100 years of domination by the United States."[20] In his visits to China, Chávez has promoted plans to rebuild a Panamanian pipeline to pump crude oil to the Pacific. Meanwhile, at the request of the Senate Foreign Relations Committee, the U.S. Government Accountability Office (GAO) is considering contingency plans in case of Venezuelan oil supply disruption.[21]

Eight of the top 10 countries with the largest proven oil reserves—Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, and Venezuela (Canada and Russia excepted)—are members of OPEC.[22] Both OPEC's and non-OPEC countries' oil production is expected to rise.[23] Although in the medium term, OPEC's share of world oil production is expected to remain at 40 percent, OPEC's power will be most significant in the long term when non-OPEC oil production declines, as OPEC controls 70 percent of today's proved

reserves worldwide.[24] The United States thus has security and economic interests at stake when dealing with the OPEC cartel, many of whose members are not on particularly good terms with Washington. Combined with a rising worldwide demand, the decline of non-OPEC countries' production will give OPEC even more power and will cause prices to be much higher and more unstable in the future.

Economic Vulnerabilities

The price for imports of crude oil has increased markedly since 2003, but demand has not waned in response. Due to higher oil prices, energy imports added about $70 billion to the U.S. trade deficit in 2005 and $50 billion in 2006.[25] They currently account for roughly one-third of the current trade imbalance. In the summer of 2005, Federal Reserve Board Chairman Alan Greenspan warned Congress that increased energy prices since the end of 2003 diminished U.S. economic growth by about one-half of a percentage point in gross domestic product in 2004 and by three-fourths of a point in 2005.[26]

High energy prices hurt energy-intensive sectors of the economy and have trickle-down effects on other sectors as well. Consumers have been hurt by rises in fuel prices. Feeling their reduced purchasing power, they cut back on spending, thus diminishing economic growth from the demand side. In a May 2007 poll, two-thirds of Americans reported that they have been affected financially in some meaningful way by higher gas prices. For 18 percent, it created a financial hardship, and an additional 49 percent indicated that high gas prices caused them to adjust their usual spending and saving habits in significant ways. Lower-income households and middle-income families have been especially affected.[27]

If consumer spending falters and business becomes more cautious about expanding, reassessing the profitability of investment projects in light of higher energy costs, the United States might slide into a recession, which would cause higher unemployment and slow private spending even further. Signals of a weakening U.S. economy may prevent trading partners from reinvesting their returns in the United States. If U.S. productivity and economic power were seriously questioned, investors might seek different havens to get a better return on their investments. This would put the U.S. economy under considerable strain and put the dollar in doubt as a safe harbor currency.

In the long run, however, U.S. markets may adapt to these challenges. Higher energy prices will provide strong market incentives to find alternative sources of energy, to develop new technologies, and to improve energy efficiency. For these effects, there is an additional driving force: increasing public concern about environmental damage caused by traditional forms of energy consumption.

The American Public Goes Green

Oil consumption accounts for about 40 percent of energy-related carbon dioxide emissions, which cause pollution, human health problems, and climate change. The past five years have shown substantial increases in the public's belief that the environment needs greater attention. Americans worry "a great deal" more about the "quality of the environment" than "the possibility of future terrorist attacks in the United States."[28] Moreover, they project that the environment will be the "most important problem" facing the United States 25 years from now. Strikingly, Americans are much less concerned about the lack of energy sources or an energy crisis, terrorism, social security, health care, or the economy in general.

Americans are not only concerned, they are ready to take and pay for action to reduce global warming. An overwhelming majority of U.S. citizens are prepared to spend "several thousand dollars" to make their homes energy efficient (78 percent), to ride mass transit such as buses and subways "whenever possible" (77 percent), to install a solar panel to produce energy for their homes (71 percent), and to buy a hybrid car (62 percent).[29] Only 36 percent, however, would support the construction of a nuclear energy plant near their homes.

In addition to their openness to personal sacrifices, Americans want their government to deal with the problem. About 80 percent of U.S. taxpayers favor spending government money to develop alternative sources of fuel for automobiles, set higher emissions and pollution standards for business and industry, more strongly enforce federal environmental regulations, spend more government money on developing solar and wind power, set higher emissions standards for automobiles, and impose mandatory controls on carbon dioxide emissions and other greenhouse gases.[30]

Interestingly, proposals reflecting these public concerns figured less prominently on the political agenda during Bush's tenure than other proposals that had the strongest public opposition, such as opening up the Arctic National Wildlife Refuge for oil exploration or expanding the use of nuclear energy (about one-half of Americans are opposed to each).[31] Is it just this administration, or can other factors help explain this distortion?

Path Dependencies of the Political System

Even though a broader analysis of security, economic, and environmental considerations strongly suggests a national interest in becoming less dependent on traditional fossil fuels, the status quo has proven to be more powerful than these pressing issues in determining the U.S. response to energy dependence.

One important factor is a lack of political leadership on the issue. The president and Congress have so far calculated that imposing costs on consumers and taxpayers would cost them politically. Bush has only recently and, so far, only rhetorically begun to act like a steward of the earth, mainly to appease part of his evangelical base, which has recently been emphasizing moral aspects of the environmental issue. Some evangelical leaders have decided to back the Evangelical Climate Initiative to fight global warming, proclaiming that "millions of people could die in this century because of climate change."[32] The National Association of Evangelicals, representing 45,000 churches and 30 million evangelicals, is also committed to "creation care," whereas the Southern Baptist Convention, another Republican stronghold representing 16 million people, warns its members not to align with "extreme environmental groups" or to rely on "questionable science."[33]

Democratic presidential aspirants have also shied away from asking voters to sacrifice.

Coping with this somewhat tricky environmental cause of his flock, Bush has generally stressed the need to be "wise stewards of the environment" in his energy initiative.[34] During its tenure, the administration has routinely blocked any binding international efforts to significantly reduce greenhouse gas emissions, such as the Kyoto Protocol. Yet, Democratic aspirants for the White House also shy away from asking sacrifices from their voters. In the Democratic presidential debate in April 2007, Senator Joseph Biden (Del.), for example, did not really ask the average American to accept any "hard" solutions to global warming.[35]

Another important factor is established fossil fuel interests' access to policymakers. The Cheney energy task force is but one prominent, albeit not transparent, example of this. Because the group proceeded behind closed doors, critics charged that the energy industry was exercising undue influence over national energy policy. Congress, exercising its oversight authority, prompted the GAO, the investigative arm of Congress, to make the records of the task force public. The GAO filed a lawsuit against the Bush administration, but Judge John D. Bates, a recent Bush appointee, dismissed the case. The GAO dropped the case, and most of the activities of the energy task force have still not been disclosed to the public. Campaign contributions to Republicans and Democrats are another means by which the oil industry maintains its connections to the government.

The electoral system causes yet another misrepresentation. Because every state, regardless of its size and population, is represented by two senators,

highly populated states, many of which bear the brunt of environmental problems, have arguably disproportionately smaller representation in the Senate on this issue than less populated rural states. For economic reasons, many farmers in these rural states are strongly opposed to environmental policies and could be counted on as reliable allies of the oil lobby. Even bills that have been promoted by prominent Republicans, such as Senator John McCain (Ariz.), have been voted down in the Senate in 2003 and 2005. Additionally, rules in the Senate enable individuals to block legislation through holds or filibusters. On June 21, 2007, for example, a Senate bill that would have provided tax incentives for alternative energies lacked the 60 votes necessary to end the filibuster.

A combination of these factors has led U.S. policymakers to adopt a business-as-usual approach, favoring traditional fossil energy interests and disregarding security, economic, and environmental concerns. What could change this dynamic?

An Opportunity for Entrepreneurial Leadership

Sensing the pressure from state environmental initiatives, such as those in California, and anticipating mandatory federal controls over carbon emissions, entrepreneurial members of the business community have become involved in the U.S. Climate Action Partnership (USCAP). USCAP is a group of businesses and leading environmental organizations jointly calling on the federal government to enact national legislation to reduce greenhouse gas emissions. Automakers such as General Motors proactively help lawmakers to come up with legislation that emphasizes innovation and the role of new technologies. U.S. carmakers have been lagging behind foreign manufacturers technologically and losing market share to them as they have pioneered fuel-efficient vehicles and are ahead of the curve when it comes to hybrid cars. The Big Three U.S. automakers have a particular interest in flex-fuel technology that could burn various alternative fuels because it might give them an advantage over foreign automakers building hybrid cars. To provide an additional incentive for innovation, the government could help redirect the U.S. automakers' currently unsustainable path by assisting them in avoiding financial difficulty by covering the cost of their retired workers' health benefits if the companies invested in new technology.

The U.S. government has an important role to play in supporting innovation in the private sector.[36] New technologies require development efforts that the market alone cannot create. From an economic standpoint, alternative energy sources have been put at a disadvantage by the U.S. government's subsidies for the fossil fuel and nuclear industries since the 1980s.[37] To compen-

sate for this and to remedy a market failure inherent to public goods such as innovation, the government should subsidize new research and development (R&D).

Renewable fuels, both corn- and sugar-based, and ethanol from cellulose sources such as switchgrass have particular market potential. They may one day displace fossil-based transportation fuels. For the time being, however, they still have to compete with traditional fuels, and technology to develop their full potential will take time. Although national subsidies could accelerate the use of ethanol in the short term, only international research cooperation to come up with new technologies and open markets will make this enterprise commercially viable in the long run.

The U.S. government has an important role to play in supporting private-sector innovation.

The U.S. agricultural sector could choose to imitate best practices from other countries, such as Brazil, whose pioneering use of ethanol, biodiesel, and flex-fuel cars on a commercial scale has helped the country to run its transportation sector independently of foreign oil. U.S. farmers are protected by secondary tariffs of $0.54 per gallon on imported ethanol. If Washington removed those market barriers, U.S. refineries could take advantage of more efficient ethanol producers worldwide, notably in Brazil, the Caribbean, and Central America. In turn, competition would help U.S. farmers to become more efficient and competitive in producing ethanol and biodiesel.

In March 2007, the United States and Brazil entered into a bilateral energy partnership to develop biofuels. Because other nations also have an interest in alternative fuels and in technology development that meets the market test, there are incentives for multilateral action. As one cannot rule out competitors' free-riding on U.S. and Brazilian R&D, there is even more reason to create multilateral structures to conduct collective research efforts. Under a multilateral framework, scientists and economists worldwide could collaborate on new technologies and efficient marketing strategies.

As a protection against OPEC's interests and influence, innovation-oriented governments should establish countercyclical taxes on fossil fuels linked to the market price of oil.[38] These taxes would protect investors in new energy technologies against sudden OPEC-instigated drops in oil prices. In addition, the revenue generated by sustainable-energy security taxes should be used for supporting R&D in renewable energies.

With technological advances, the argument of a trade-off between environmental protection and the economy or "government against the market"

rhetoric is increasingly losing legitimacy. A majority of Americans have come to realize that traditional fossil fuel–based thinking undermines U.S. security as well as its technological and economic leadership in the world.

Entrepreneurial political leaders may find economic opportunities for environmentally sound new technologies to be a winning issue in 2009. A nationwide survey among registered voters commissioned by the Center for American Progress found that a majority of Americans think that their country is falling behind (40 percent) or has fallen far behind (13 percent) the rest of the world in developing clean, alternative energy. At the same time, a solid majority of Americans believe that shifting to new, alternative energy production will help the U.S. economy and create jobs.[39]

Moreover, for 35 percent of respondents in a CBS News/*New York Times* survey, the environment is a make-or-break issue in the 2008 presidential election.[40] Only 15 percent of respondents indicated that they would be turned off by a presidential candidate who asked the American people to make sacrifices to protect the environment, while one-third said it would make them more likely to support that candidate.

Getting Smart on Energy

Political and public scrutiny of the security, economic, and environmental costs of the current U.S. energy policy compels the United States to embark on an alternative path toward a more efficient homegrown supply of renewable energy. Brookings Institution scholar David Sandalow suggests that "[a]n unusual political consensus and game-changing technologies give the next president a rare opportunity to address several of the nation's most important security, environmental, and economic challenges."[41] The future president and other political leaders, recognizing the critical mass of support that has emerged among the American public, should aggressively move forward on lessening U.S. dependence on traditional fuels.

The worldwide interest in renewable energies creates a unique chance for the United States to reclaim world leadership, spearheading international cooperation to solve the energy conundrum. Unlike limited fossil fuels, renewable forms of energy are to a large degree the result of unlimited and mobile brain power. Although U.S. hard power seems to have lost its effectiveness in securing America's energy security and economic prosperity, its technological and political leadership potential still holds a promising alternative for the next president, who would even be more likely to gain that office by promoting renewable energy alternatives as part of their campaign to seek an end to the U.S. addiction to oil.

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