

**GLOBAL WARMING:
WHY REDUCING FOSSIL FUEL USE IS ESSENTIAL
REGARDLESS OF THE OUTCOME OF
THE CLIMATE CHANGE DEBATE**

DR. JIM BOWYER

MATTHEW WENBAN-SMITH

KATHRYN FERNHOLZ

DR. JEFF HOWE

MARCH 28, 2007



DOVETAIL PARTNERS, INC.



Global Warming: Why Reducing Fossil Fuel Use is Essential Regardless of the Outcome of the Climate Change Debate

Introduction

As the global warming debate heads into the 15th round, bold action to reduce fossil fuel use within the United States is still nowhere to be seen. But there are a number of compelling reasons to reduce fossil fuel use that have nothing whatsoever to do with lingering debates over global warming, and that have major economic and strategic implications for the very near future. ***It is long past time to decouple the climate change debate from considerations of how fossil fuel consumption, and particularly crude oil consumption, might be drastically reduced.***

Reducing Fossil Fuel Use

One of the many curiosities of the yet-young 21st century is the total inability of American political leaders to effectively address rising U.S. petroleum consumption and import dependence. Curious as well is the apparent lack of interest in pursuing petroleum consumption-related issues separate from the climate change debate, despite compelling reasons to do so.

It is increasingly evident that the United States should do everything it can, and as soon as possible, to reduce consumption of petroleum. Moreover, the case for reducing consumption is very strong even without including any concerns regarding climate change. Among the reasons for reducing consumption are:

- 230,137 gallons. That is the rate at which petroleum consumption is expected to increase globally each **day** throughout 2007.¹ What this means is that **daily petroleum consumption is expected to be about 84 million gallons higher just one year from now.**
- In 2000, the U.S. Geological Survey (USGS), under contract to the U.S. Department of Energy, completed the most comprehensive study of global petroleum supplies and consumption rates ever conducted; that study concluded that world production of petroleum would likely peak in 2037, and possibly as soon as 2030 given current rates of growth in energy use.^{2, 3} **All scenarios of**

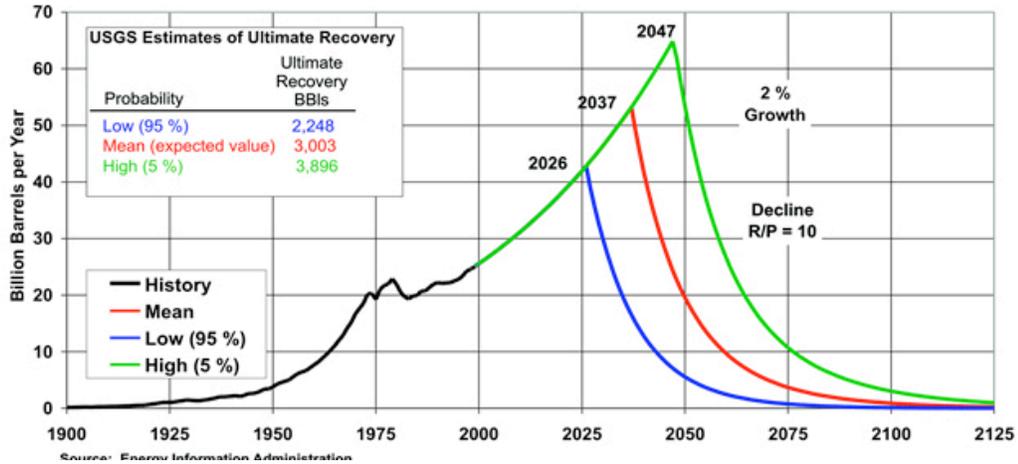
¹ US Department of Energy, Energy Information Administration, International Petroleum Supply and Demand: Base Case. February 2007. (<http://www.eia.doe.gov/emeu/steo/pub/3tab.html>)

² The Year of Peak Production – When Will Worldwide Conventional Oil Production Peak? Energy Information Administration. (http://www.eia.doe.gov/pub/oil_gas/petroleum/presentations/2000/long_term_supply/sld006.htm)

³ Wood J., Long, G., and Morehouse, D. 2004. Long-term World Oil Scenarios. Energy Information Administration. (http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2004/worldoilsupply/oilsupply04.html)

likely developments once peak production has passed suggest rapid decline in petroleum availability (Figure 1). The USGS peak oil estimate is the most optimistic of a number of such estimates, with several respected research organizations, including the Dutch energy research institute ECN, suggesting an occurrence of peak production within the time frame 2012-2017.⁴

Figure 1
Annual Production Scenarios with 2 Percent Demand Growth Rates and Different Resource Levels (Decline Reserves/Production=10)



Source: USGS/USDOE ³

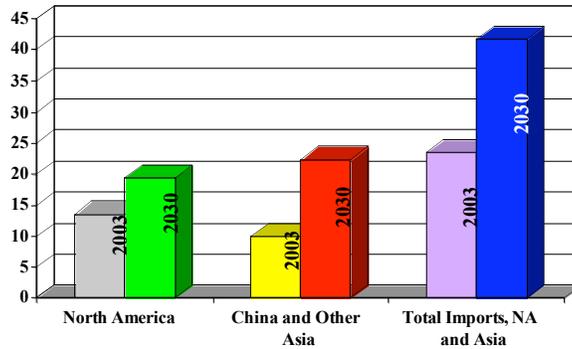
- **The United States currently imports 60.3 percent of its petroleum needs**, a figure that is expected to rise to 68 percent within the near future.⁵ More than half of petroleum imports today come from OPEC countries.
- North American net imports of petroleum are expected to increase 40 percent by 2030 while net imports to Asian countries will increase 125 percent (Figure 2). **Consumption of oil by Asian countries will, for the first time, exceed North American consumption by about 2028.**⁶

⁴ Beckman, K. 2005. Oil will be Depleted Sooner than the IEA Expects. Energy Bulletin, November 14. (<http://www.energybulletin.net/10857.html>)

⁵ U.S. Department of Energy, Energy Information Administration. 2007. Basic Petroleum Statistics, February. (<http://www.eia.doe.gov/neic/quickfacts/quickoil.html>)

⁶ Energy Information Administration, International Energy Outlook, 2006. Chapter 3: World Oil Markets. (<http://www.eia.doe.gov/oiaf/ieo/pdf/oil.pdf>)

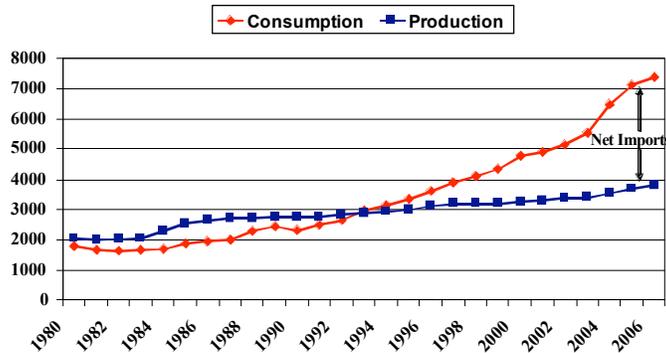
Figure 2
Imports of Petroleum by Selected Regions
2003 and 2030
(Million barrels/day)



Source: US Department of Energy, Energy Information Administration, International Petroleum Supply and Demand: Base Case. February 2007.

- Increasing use of petroleum in China accounts for more than one fourth of the annual increase in global consumption, and net imports, 60 percent of which come from the Middle East, are growing (Figure 3). **Within 25 years, at roughly the same point in time that global petroleum supplies are expect to peak, China’s net petroleum imports are expected to be within 10 percent of current U.S. net petroleum imports.**⁷

Figure 3
China’s Oil Production and Consumption
1980-2006
(thousand barrels/day)

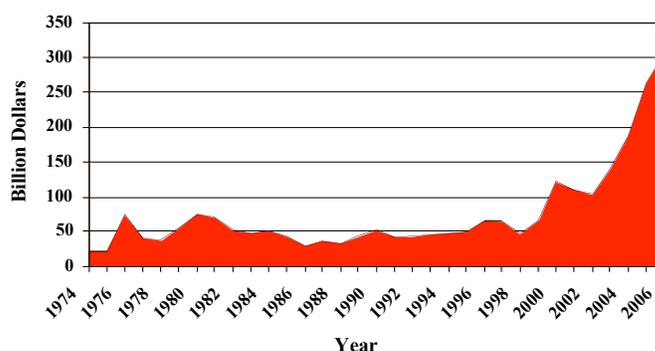


Source: Energy Information Administration (2007).

⁷ See reference 6.

- China's imports of oil from the Middle East are expected to rise 500 percent (or six-fold) by 2030, and China, just as the U.S., is pursuing contracts for future petroleum supplies worldwide.^{8,9} China and other countries increasingly have the economic might to compete with the U.S. in global markets.
- **The U.S. deficit for trade in energy products has risen five-fold over the past decade, to a level of \$305 billion, representing over \$1,000 for every man, woman, and child in the U.S.** (Figure 4); ninety percent of the energy products deficit is due to petroleum net imports, with a considerable quantity of funds flowing to countries with policies and positions unfriendly to the United States.

Figure 4
U.S. Trade Deficit, Energy Products, 1974 - 2006



Source: USDOE, Energy Information Administration, Monthly Energy Review, Jan.2007.

- Natural gas, a potential substitute fuel for use in transportation, was the topic of discussion between the governments of Russia and Iran earlier this month; the two governments, that together control 50 percent of the global natural gas supply, are reportedly exploring the possibility of establishing a natural gas cartel patterned after OPEC.¹⁰ The U.S. is a net importer of natural gas, currently relying on imports (mostly from Canada) to supply 16.2 percent of domestic consumption.¹¹

⁸ Bahree, B. and Cummins, C. 2006. Crude Awakening – In the Oil Market, Power is Shifting Away From American and its Allies. Wall Street Journal (Classroom Edition). (September).
(http://www.wsjclassroomedition.com/archive/06sep/econ_oil.htm)

⁹ Luft, G. 2005. China's Future Energy Development and Acquisition Strategies. U.S.-China Economic and Security Review Commission, July 21.
(http://www.uscc.gov/hearings/2005hearings/written_testimonies/05_07_21_22wrts/luft_gal_wrts.php?action=jul)

¹⁰ Gold, R. and White, G. 2007. Russia and Iran Discuss a Cartel for Natural Gas. Wall Street Journal, February 2.

¹¹ Energy Information Administration. 2006. Net Imports as a Percent of Total Consumption of Natural Gas.
(http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/current/pdf/figure_06_07.pdf)

- The U.S. and Canada combined have only about 4 percent of proven world reserves of natural gas.¹²
- Efforts now underway to replace transportation fuels with biofuels such as ethanol and biodiesel will at best replace 30 to 35 percent of *current* gasoline and diesel fuel consumption.¹³ Projected growth in demand for transportation fuels will serve to reduce these percentages.

In short, *without even considering the potential impact of fossil fuel consumption on global climate*, the United States is nonetheless moving ever closer to an energy crisis that could impact every facet of American life. **A dramatic and rapid change in U.S. petroleum consumption habits is needed, warranting immediate attention at the highest levels of government, industry, and society at large.** Actions to reverse trends in natural gas consumption are needed as well. There has never been, nor is there now, any good reason to delay action on reducing fossil fuel consumption pending the outcome of the climate change debate.

A Few Observations Regarding Climate Change

The recently released report of the Intergovernmental Panel on Climate Change (IPCC)¹⁴ makes it clear that atmospheric concentrations of carbon dioxide, methane, and nitrous oxide, all known to be liberated in combustion of fossil fuels and to hold heat when part of the upper atmosphere, are far above historical levels. Also clear is that the earth's climate is warming. Although several key questions remain unanswered by the report's authors, the findings provide additional arguments for curbing fossil fuel consumption.

The IPCC report reflects a remarkable degree of scientific consensus pointing toward human activity as playing a significant role in a global warming cycle that dates back at least three to five decades and probably longer. The report also **points to a near certainty of substantial warming of the global climate in the decades ahead, and clearly links greenhouse gases such as carbon dioxide and methane – gases that are emitted through combustion of fossil fuels – to the current and expected magnitude of warming.** Concentrations of carbon dioxide are documented at 379 parts per million (compared to a pre-industrial level of about 280 ppm) and of methane at 1774 ppm (compared to pre-industrial levels of 715 ppm); these concentrations, in fact, appear to be higher than at any point in at least several hundred thousand years. Also documented are

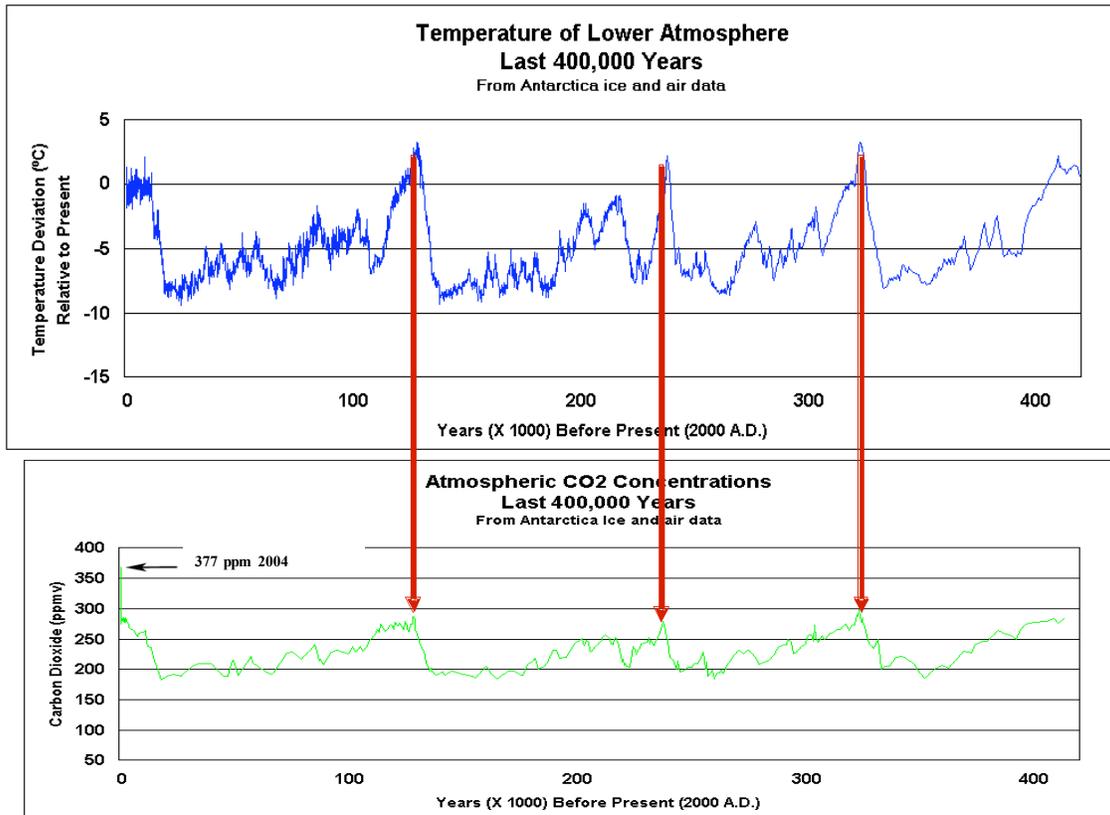
¹² EIA. 2006. World Proved Reserves of Oil and Natural Gas, Most Recent Estimates. (<http://www.eia.doe.gov/emeu/international/reserves.html>)

¹³ Perlack, R., Wright, L., Turhollow, A., Graham, R., Stokes, B., and Erbach, D. 2005. Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply. U.S. Department of Energy, Oak Ridge National Laboratory/U.S. Department of Agriculture. (http://www.eere.energy.gov/biomass/pdfs/final_billionton_vision_report2.pdf)

¹⁴ Intergovernmental Panel on Climate Change. 2007 (Feb. 2). Climate Change 2007 – The Physical Science Basis. Summary for Policymakers. (<http://www.ipcc.ch/SPM2feb07.pdf>). See also: (<http://www.usgcrp.gov/usgcrp/links/ipcc.htm>), and (<http://www.whitehouse.gov/news/releases/2007/02/20070202.html>).

relationships between atmospheric concentrations of various pollutants and the potential for warming of the climate. Calls for a reduction in fossil fuel consumption and related emissions on the part of all nations have already been issued, and pressure for governments to take action is sure to follow.

Figure 5
 Temperature of Lower Atmosphere Last 400,000 Years
 Form Antarctica Ice and Air Data



Source: (http://www.clearlight.com/~mhieb/WVFossils/last_400k_yrs.html)

An unfortunate aspect of the new IPCC report is that it refers only incidentally to past climate warming cycles, and does not address in any straightforward way the possible role of natural cycles in the current warming trend. Thus, a report that has been billed as one that would mark the end of the climate change debate leaves several key points of debate unanswered. Although the report strongly indicates a major and continuing human influence in the current warming trend, it also acknowledges an extended warm period that occurred 125,000 years ago. However, the report does not mention preceding warm periods that have occurred at somewhat regular intervals (Figure 5). This omission is certain to fuel further debate, as are indirect statements such as the following:

- Most of these studies [of air and water temperature] have detected a significant change and show that the observed warming trend is unlikely to be *entirely* natural in origin. (emphasis added).
- Furthermore, the probability is very low that these correspondences could occur by chance as a result of natural internal variability *only*. (emphasis added)
- Nevertheless, the balance of evidence suggests that there is a discernible human influence on global climate.

The words *entirely* and *only* would appear to be extremely important as policymakers begin to think about how to respond to the global warming threat. If, for example, the current warming trend were completely the result of human activity the solution to the problem would undoubtedly be different than if warming were driven in part by natural cycles, but *accentuated* by actions of mankind. So, as actions are mounted to address known drivers of warming, continued study will be needed to sort out the specific role of various causal factors and to help guide future actions of world leaders.

Further research may or may not resolve all remaining doubts about the causal link between fossil fuel use and climate change. But demonstrating such linkage is not required to justify urgent action to dramatically reduce our use of oil and natural gas.

The Bottom Line

There are very compelling reasons for the U.S. to act quickly and decisively to rein-in consumption of petroleum and natural gas, two key fossil fuels, without considering at all the debate over the role of fossil fuel combustion on climate change. High and growing import dependence, rising and negative impacts on the U.S. balance of trade, increasing global competition for petroleum and natural gas, and a near certainty that world production of petroleum is nearing peak are each reasons for reassessing use trends. Taken together, they present a very strong case for urgent action. When climate change is considered, the very strong case for action becomes stronger yet.

It is time to decouple actions on petroleum and natural gas consumption and lingering questions regarding climate change. With each passing month of inaction the U.S. is reducing the range of available options for dealing with unprecedented change in global energy markets.

This report was prepared by
DOVETAIL PARTNERS, INC.

Dovetail Partners is a 501(c)(3) nonprofit corporation that collaborates to develop unique concepts, systems, programs, and models to foster sustainable forestry and catalyze responsible trade and consumption.

FOR MORE INFORMATION OR TO REQUEST
ADDITIONAL COPIES OF THIS REPORT,

CONTACT US AT:

INFO@DOVETAILINC.ORG

WWW.DOVETAILINC.ORG

612-333-0430

© 2007 Dovetail Partners, Inc.

This Dovetail Report is made possible through the generous support of the Surdna Foundation and additional individual donors.



DOVETAIL PARTNERS, INC.

528 Hennepin Ave, Suite 202

Minneapolis, MN 55403

Phone: 612-333-0430

Fax: 612-339-0432

www.dovetailinc.org