WebMemo
Published by The Heritage Foundation
No. 3318
July 20, 2011

Alternative Fuels as a Military Strategy

David W. Kreutzer, Ph.D.

Will shifting the United States military to alternative fuels reduce casualties and geopolitical threats? That is what some are contending.[1] Their answers focus on two main factors: the material and human costs of transporting fuel in a battle zone and oil revenues received by unfriendly regimes. Digging just a little below the surface shows these arguments to be camouflage for a bright green agenda that has high costs for the military, both in dollars and lives.

Argument One: Using Biofuels in Battle Zones. Unless a biofuels plan involves soldiers carrying camelina seeds and refinery blueprints into battle, the biofuels would still need to be transported the same way as petroleum-based fuel—only it is worse.

In a great irony, the lower energy density of biofuels would require even more of the costly and dangerous convoys than the petroleum-based fuels. To match the energy delivered by petroleum-based diesel, convoys would have to transport 12 percent more biodiesel.[2] Replacing gasoline with ethanol is worse yet, as that swap would necessitate roughly 50 percent more tanker trips.[3] Clearly, transporting biofuels in place of petroleum-based fuel increases cost and exposure in hostile environments.

Argument Two: Refraining from Buying Petroleum from Hostile Regimes. Another case for a military biofuels program rests on supposed geopolitical impacts. Similar arguments are used for civilian biofuels programs. The argument is that purchasing petroleum sends revenues to producers who fund activities harmful to the U.S. The alternative/renewable fuels policy seeks to reduce petroleum consumption and thereby reduce funding to unfriendly world actors.

However, programs to reduce American imports—whether restricted to the military or applied more broadly—are not likely to have any effect in the short run and very limited, if any, effect in the long run. The problem is that U.S. petroleum imports are about 10 percent of world production and are expected to be an even smaller fraction in the future as demand from developing countries grows.

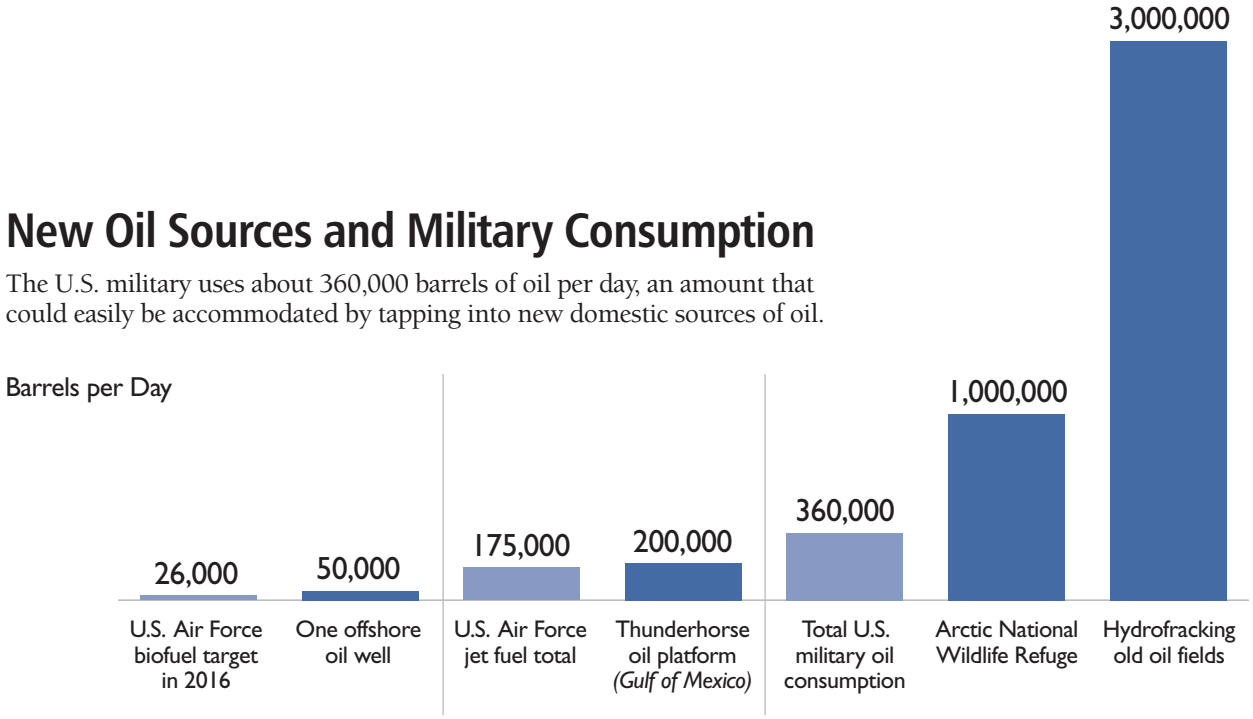
The U.S. military's total petroleum consumption is about 360,000 barrels per day, of which 160,000–175,000 barrels fuel Air Force jets. The Air Force has a target to produce 26,000 barrels per day of jet biofuels by 2016.[4] Instead of going the biofuel route, the Air Force could obtain more conventional energy. An evaluation of some available domestic petroleum supplies compared to the military's needs is useful.

Permitting one additional well in the Gulf of Mexico could produce an additional 50,000 bar-

This paper, in its entirety, can be found at:
http://report.heritage.org/wm3318

Produced by the Center for Data Analysis

Published by The Heritage Foundation
214 Massachusetts Avenue, NE
Washington, DC 20002–4999
(202) 546-4400 • heritage.org



Source: Calculations by the author and the Center for Data Analysis. See footnotes for details.

Chart 1 • WM 3318 heritage.org

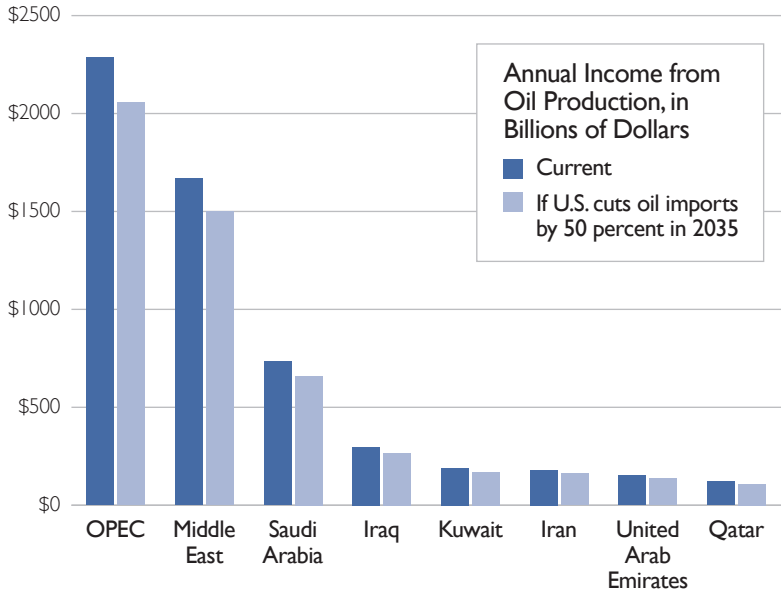
rels per day—nearly double the amount of the Air Force's 2016 biofuels target. One platform (fed by multiple wells) in the Gulf of Mexico can produce 200,000 barrels of petroleum per day, more than is used by all of the jets in the Air Force.[5] Opening just a fraction of 1 percent of the Arctic National Wildlife Refuge could provide access to billions of barrels of petroleum and increase domestic production by 1 million barrels per day—nearly three times the total military consumption of petroleum products. Hydro-fracturing is being used to gain access to oil in previously discounted onshore oil fields. Some predict that these fields could generate 3 million barrels per day within the decade.[6] (See Chart 1.)

Chart 2 illustrates the revenue impact of the U.S. cutting its projected imports by 50 percent

1. Eric Beidel, "Navy Takes Biofuels Campaign Into Uncharted Waters," *National Defense*, January 2011, at *http://www.nationaldefensemagazine.org/archive/2011/January/Pages/NavyTakesBiofuelsIntoUnchartedWaters.aspx* (July 20, 2011), and Lisa Daniel, "Mabus: Energy Initiatives 'Make Us Better Warfighters'," American Forces Press Service, May 5, 2011, at *http://www.defense.gov/news/newsarticle.aspx?id=63824* (July 20, 2011).
2. U.S. Department of Energy, "Biodiesel—Clean, Green Diesel Fuel," September 2001, at *http://eerc.ra.utk.edu/etcfc/docs/Biodiesel-CleanGreen.pdf* (July 20, 2011).
3. George Thomas, "Overview of Storage Development," U.S. Department of Energy Program 2000 Annual Review, May 9–11, 2000, at *http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/storage.pdf* (July 20, 2011).
4. Renee Schoof, "US Military Ready to Buy Homegrown Jet Biofuels," *The Fayetteville Observer*, June 26, 2011, at *http://fayobserver.com/articles/2011/06/26/1103243?sac=Bus* (July 20, 2011).
5. Press release, "Thunder Horse Production Ramping Up," BP, December 18, 2008, at *http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7049859* (July 20, 2011).
6. Institute for Energy Research, "Shale Oil May Mirror the Shale Gas Boom," June 30, 2011, at *http://www.instituteforenergyresearch.org/2011/06/30/shale-oil-may-mirror-the-shale-gas-boom/* (July 20, 2011).

in 2035.[7] Cutting U.S. petroleum imports in half would reduce OPEC revenues from $2.3 trillion to $2.1 trillion. Though hundreds of billions of dollars per year is a large amount of money, the remaining $2.1 trillion could fund nearly the same amount of mischief. In addition, exporters friendly to U.S. interests—Canada and Mexico, for instance—would also see their revenues drop 10 percent. Meanwhile, whatever America might sacrifice to reduce imports would give China a nearly $60 billion per year bonus, as its import costs would fall.

How Reducing U.S. Imports Would Affect Middle Eastern Oil-Producing Countries



Sources: U.S. Energy Information Administration (EIA), Office of Energy Markets and End Use, and EIA, Generate World Oil Balance Model (2010).

Chart 2 • WM 3318 heritage.org

Do Biofuels Have a Cost Advantage? Suppose a combined military and civilian biofuels program were to cut U.S. imports by half, and this led to a 10 percent drop in the price of oil. The U.S. could expect to save $19 billion per year on the 4 million barrels per day it would continue to import in 2035. However, this $19 billion savings would be undone completely if the cost of biofuels were as little as 10 percent above the price of petroleum. That is, if the 4 million barrels per day of biofuels needed to cut imports in half had a cost premium of 10 percent, then this higher cost would be exactly offset by the 10 percent savings on the equal number of barrels imported.

In fact, the subsidies needed for biofuels production greatly exceed a 10 percent premium. Up through 2009, biodiesel producers received a subsidy of $1 per gallon, which translates to about $42 per barrel, or a 40 percent subsidy.[8] Even with the subsidies, biodiesel production was only about 1 percent of domestic consumption.

If biofuels end up costing less than petroleum, there is no need for subsidies and mandates. That is how markets work—consumers choose cost-effective and superior products over other products. The drive to supply these better mousetraps pushes entrepreneurs and venture capitalists to invest in research and development, even though the profits may come years later.

Note that according to the Energy Information Administration, the world market for petroleum will be about $3.5 trillion in 2020. If a lower-cost biofuel garnered just 5 percent of the world market, it would still be worth $175 billion per year. That should be enough motivation for inventors to pursue truly promising—and cost-effective—technologies.

The Military Must Keep Its Mission First. The biofuels available today are simply not a smart option for military use. They require more money

7. The Energy Information Administration's reference case projects the U.S. will import 8 million barrels per day in 2035 and that the price will be $133.22/barrel. A long-run demand elasticity of 0.4 implies a 4 million barrel per day cut in world consumption would cut the price by about 10 percent.
8. Ron Gecan and Rob Johansson, "Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals," Congressional Budget Office Study, July 2010, at *http://www.cbo.gov/ftpdocs/114xx/doc11477/07-14-Biofuels.pdf* (July 20, 2011).

to transport and do not provide a national security benefit. Grafting a broader social agenda like "green energy" onto the military's mission detracts from its ability to provide national security effectively and efficiently. The Pentagon should make the energy choices that best advance its capabilities for that critical mission.[9]

—David W. Kreutzer, Ph.D., is Research Fellow in Energy Economics and Climate Change in the Center for Data Analysis at The Heritage Foundation.

9. Jack Spencer, "Capability, Not Politics, Should Drive DOD Energy Research," Heritage Foundation *WebMemo* No. 3299, June 22, 2011, at *http://www.heritage.org/research/reports/2011/06/capability-not-politics-should-drive-dod-energy-research*.