

In Defense of Biofuels

Robert Zubrin

On the world markets, the cost of a barrel of oil is, at this writing, over \$120. In the United States, a gallon of gasoline now costs, on average, roughly \$3.50. Even when adjusted for inflation, both of those figures are now higher than they have ever been—higher than during the 1973 oil embargo, higher than during any subsequent peak. And yet, bizarrely, instead of focusing their attention on the staggering cost of oil and its ruinous implications for global growth and economic wellbeing, American policymakers and energy analysts have begun to decry a different fuel—one that holds the key to ending our dependency on expensive oil purchased from countries with interests inimical to our own.

Biofuels—a class of fuels of which ethanol is the most prominent and immediately promising—can play a central part in weaning the United States from oil. But in recent months, a flood of press reports, articles in scientific journals, and statements from international bureaucrats have suggested that ethanol is starving the world's poor, is a waste of government money, and is bad for the environment. These claims are simply not true; some are based on partial information, some on gross disinformation, but none of them can withstand close scrutiny. Many of the critics of ethanol mean well: they are worried about hungry children or big government. Others have more self-interested motivations for their criticism of biofuels—like Hugo Chávez, the preening, obstreperous dictator of oil-exporting Venezuela, who has called ethanol production a “crime.” Still others are driven by a Malthusian vision of a world with fewer people in it. No matter the motivations of these unlikeliest of bedfellows, their recent objections to ethanol could have the cumulative effect of warping U.S. and international biofuels policy—and just at the moment when exorbitant oil costs should, if anything, be leading legislators to adopt the critical technology needed to expand the role of biofuels in the world's fuel supply.

Paying the Oil Tax

Before addressing the specific objections to biofuels, it is worth taking stock of the pernicious consequences of what President George W. Bush

Robert Zubrin, a New Atlantis contributing editor, is an aerospace engineer and the president of Pioneer Astronautics. His most recent book is Energy Victory: Winning the War on Terror by Breaking Free of Oil (Prometheus, November 2007).

called, in his State of the Union address in 2006, America's regrettable "addiction" to oil. Just a few months after that speech, in June 2006, a group of government officials met and decided to raise taxes on all Americans. None of the officials involved were elected by Americans, however, or appointed by our elected representatives, and the meeting was not held in Washington. Rather, those who gathered in Caracas, Venezuela to deliberate on our "taxes" were representatives of a group of foreign theocracies, tyrannies, and kleptocracies known as the Organization of the Petroleum Exporting Countries (OPEC).

OPEC is a cartel founded in 1960, an open conspiracy in which the rulers of a dozen countries manipulate the supply and price of oil. In 2008, given the present price of oil, Americans will pay roughly \$1 trillion for their oil supply; the world as a whole will pay about \$4 trillion. These petroleum costs are up by a factor of ten from what they were in 1999, and in essence represent a huge highly-regressive tax on the world economy. For Americans, the trillion-dollar oil levy is equivalent to a 40 percent increase in income taxes across the board—with 60 percent of the sum being forked over to foreign governments.

Averaged over the U.S. population of 300 million people, that \$1 trillion for oil amounts to about \$3,300 for every man, woman, and child in the country—or roughly \$13,300 for a family of four. The average American worker makes about \$48,000 per year, or \$37,000 after taxes paid to Uncle Sam. In 1999, such a worker supporting a family of four had to pay 3 percent of his disposable income for oil. Now Uncle Saud and Uncle Hugo are taxing him for over 36 percent of his take-home pay. Such a massive drain of cash from the pockets of consumers has profound economic implications, rippling from the transportation sector into the housing market and the markets for many other kinds of consumer goods. It has a massively depressing effect on the U.S. economy. Seen for the tax that it is—since, after all, OPEC inflates the price of petroleum and its member governments reap the revenues—it is by far the largest tax increase in American history.

Poor countries can even less afford this brutal global taxation program. It is one thing to pay over \$100 per barrel when you live in a country where the average person makes \$48,000 per year. It is quite another if you are an African or Haitian making \$1,000 per year. OPEC is starving many of these people by driving up transport, farming, and fishing costs.

And those are just the overtly economic consequences of our oil dependency. How the OPEC nations *spend* the petrodollars we send them ought to be a major concern. Iran, the second-biggest oil exporter in OPEC, is using its oil revenue to finance its nuclear program. Saudi Arabia, the

world's top oil exporter, is also the world's top exporter of propaganda for Wahhabism—the very extremist movement we have been fighting in our “War on Terror.” We have been funding a war against ourselves.

And today's high oil prices may be just the beginning. OPEC leaders including Chávez and Mahmoud Ahmadinejad of Iran are openly discussing raising the price of oil to \$200 per barrel or more. In that case, Americans' annual oil tribute will rise to \$1.8 trillion per year, to a cartel whose total worldwide extortions will top \$7.5 trillion.

Fueling Fears About Food

Hoping to reduce at least in some small way their need for oil, several countries have adopted energy policies requiring that a percentage of their national fuel supplies consist of biofuels. The European Union, for instance, is aiming to have biofuels make up 10 percent of its vehicle fuel supply by the year 2020. In the United States, legislation in 2005 and 2007 set mandates for ethanol in the nation's fuel mix; the current plan is to ramp up biofuels production until 36 billion gallons are mixed into the nation's fuel supply by 2022.

Unsurprisingly, the result of these mandates has been the rapid expansion of the nation's ethanol industry. The United States, which produced 3 billion gallons of ethanol in 2002, grew its production to 8 billion gallons in 2007, replacing some 5 percent of our gasoline supply. But while this seems like it would be cause for celebration—with enterprising and innovative American farmers helping to reduce our oil usage—some critics have recently alleged that the world's biofuels programs, especially the U.S. corn ethanol effort, are starving poor people around the world by reducing supply and driving up food prices. International bureaucrats have been the most vocal critics. A recent World Bank report claimed that “increased biofuel production has contributed to the rise in food prices.” The U.N.'s Special Rapporteur on the Right to Food denounced biofuel production as “a crime against humanity.” Jeffrey Sachs, a Columbia University economist who is an advisor to U.N. Secretary-General Ban Ki-moon, has said “we need to cut back significantly on our biofuels programs” because they are “a huge blow to the world food supply.” It seems so obvious: With so much corn being turned into fuel, food shortages must inevitably result, and biofuels programs must be the cause.

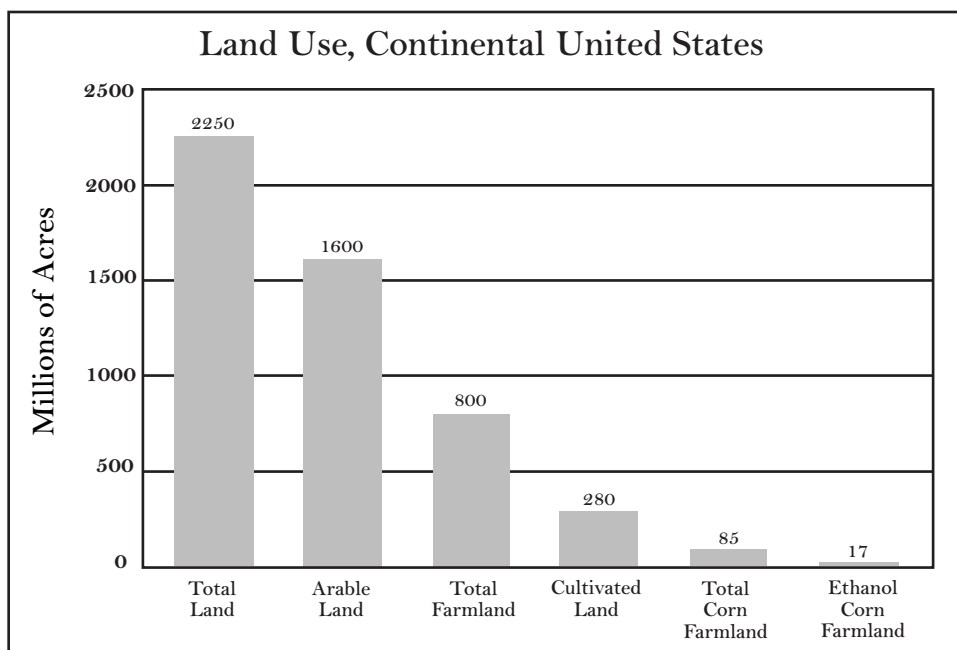
The problem is, that's completely untrue.

Here are the facts. In the last five years, despite the nearly threefold growth of the corn ethanol industry—actually, *because* of it—the amount

of corn grown in the United States has vastly increased. The U.S. corn crop grew by 45 percent, the production of distillers grain (a high-value animal feed made from the protein saved from the corn used for ethanol) quadrupled, and the net U.S. corn production of food for humans and feed for animals increased 34 percent.

Contrary to claims that farmers have cut other crops to grow more corn, U.S. soybean plantings this year are expected to be up 18 percent and wheat plantings up 6 percent. U.S. farm exports are up 23 percent over last year. America is clearly doing its share in feeding the world.

At bottom, the entire food versus fuel argument boils down to a Malthusian conceit—that there is only so much that can be grown, so if we grow more of one thing, we must necessarily grow less of something else. But this is simply false. Agriculture is not a zero-sum game. As illustrated in the bar chart below, there are roughly 2,250 million acres of land in the continental United States. About 1,600 million of those acres are arable. Roughly half of that land (800 million acres) is farmland, but only about a third of that (280 million acres) is actually being cultivated. Only about 85 million of those farm acres are presently growing corn, and just a fifth of *that* land—about 17 million acres—is growing corn that becomes ethanol. In short, there is plenty of farmland in the United States that could be used to grow more corn—or more of the other staple crops needed to meet domestic or international demand. Even more importantly,



agricultural technology is constantly advancing. U.S. corn yields per acre have risen 17 percent since 2002, and the state of Iowa *alone* today produces more corn than the entire nation did in the 1940s. Applied globally, such improved techniques can multiply world agricultural yields many times. In fact, they have risen by a factor of six since 1930—which is why, even though the world’s population has tripled since that time, there is a lot more food for everyone today.

So while it is true that there is now much more corn being used for ethanol than ever before, there is also much more total corn than ever before, including much more for food and feed than ever before, and still plenty of land, and room for implementation of improved methods to grow yet more.

But if biofuels aren’t to blame for the rising food prices, what is?

In fact, there are several culprits. One is low farm productivity in some parts of the world. Regional droughts is another. Sometimes there is a confluence of factors: Some critics have foolishly claimed that recent food riots in Haiti could be linked to the U.S. ethanol mandate even though those riots were about rice, which the U.S. doesn’t use to make ethanol, and were largely caused by unwise trade policies and a drought in Australia that, according to the *St. Petersburg Times*, “has seen [its] rice production fall by a stunning 98 percent.”

But the two primary reasons for higher food prices are, first, higher demand, and second, higher fuel prices. The increased global demand for food ought to be seen as a very good thing: it represents hundreds of millions of people, especially in China and India, rising out of poverty and moving to more calorie-rich diets. Escalating fuel prices, however, are not good news: they drive up the cost of everything we eat. For example, consider the \$3 box of cornflakes you might see in your grocery store. Farm commodity prices basically have a trivial effect on its price. A bushel of corn contains 56 pounds of grain, so at the current “very high” commodity price of \$5 per bushel, a pound of corn costs 9 cents. So the 16 ounces of corn in that cereal box cost a total of 9 cents when bought from the farmer. But when the price of oil goes up, that increases the cost of production, transport, wages, and packaging—all driving up the retail cost of food.

And, in this regard, biofuels have already done more good than harm to the world’s poor. According to the *Wall Street Journal*, “Global production of biofuels is rising annually by the equivalent of about 300,000 barrels of oil a day. That goes a long way toward meeting the growing demand for oil, which last year rose by about 900,000 barrels a day.” The paper cites a Merrill Lynch analyst who “says that oil and gasoline prices

would be about 15 percent higher if biofuel producers weren't increasing their output." So even though the world's biofuels industry is still just aborning, it has already begun to bring down oil prices.

Why Adam Smith Would Love Ethanol

That figure from Merrill Lynch contains within it the rebuttal to those who believe the United States should give up on ethanol. Those critics are mostly well-meaning small-government conservatives and libertarians who generally oppose government mandates and subsidies—an honorable disposition, to be sure, but one that must not be followed blindly. They have called for the United States to drop its mandates for incorporating ethanol into the nation's fuel supply, and have used the recent anti-biofuels push to reinforce their longstanding complaints about the federal government's subsidies for biofuels.

But if that Merrill Lynch figure is correct—if the price of oil would be about 15 percent higher were it not for biofuels—then that comes to a savings of about \$18 per barrel at current oil prices. The United States will import about 5 billion barrels of oil this year. Saving \$18 for each barrel, that adds up to a savings for the country as a whole of \$90 billion in foreign oil payments this year, and a reduction in OPEC global revenues overall of more than \$180 billion. This, in addition to cutting another \$20 billion from our oil bill by reducing the amount of petroleum that we import. Not bad, considering the pittance that American taxpayers actually shell out for the nation's corn ethanol program: only about \$4 billion per year, through a subsidy of 51 cents per gallon.

And that isn't the only way that the ethanol subsidy saves taxpayers money—it also allows for the elimination of \$8 billion in preexisting government-funded crop price supports, such as payments to farmers not to grow crops.

Again, many of the opponents of mandates and subsidies are honorable critics, troubled by government interference distorting the markets for food and energy. But it must be remembered: the global markets for food and energy are already badly distorted by trade restrictions, in the case of the former, and by the machinations of the OPEC cartel, in the case of the latter. Insofar as the nascent biofuels industry will result in eased trade restrictions (so that nations will be able to buy and sell agricultural products for fuel) and in a weakening of OPEC's monopoly power (by bringing into the energy market new fuels that can compete with oil), supporters of free markets should offer three cheers for the rise of biofuels.

It is worth mentioning that Adam Smith, the patron saint of capitalism, was not blindly opposed to all government economic interventions. Despite his general support for free trade, he wrote in *The Wealth of Nations* that he favored protectionism in cases “when some particular sort of industry is necessary for the defense of the country.” After all, “defense is of much more importance than opulence.” In fact, he didn’t just favor trade restrictions—he even supported subsidies for the sake of national defense: “If any particular manufacture was necessary, indeed, for the defense of the society,” Smith wrote, “it might not always be prudent to depend upon our neighbors for the supply; and if such manufacture could not otherwise be supported at home, it might not be unreasonable that all the other branches of industry should be taxed in order to support it.” In particular, Smith pointed to the British sailcloth industry—vital to naval propulsion in his day—as eminently deserving of government subsidy. Our need for fuel supplies independent of those imported from unfriendly nations is patently a matter of national defense, and Adam Smith would surely smile benevolently upon the federal government’s support of the biofuels industry—as should anyone interested in America’s prosperity and security.

Omissions and Emissions

For years, the environmental movement supported the U.S. ethanol program on the grounds that, by replacing oil with fuel made from biomass, we can reduce the nation’s net emissions of the greenhouse gas carbon dioxide. That support has wavered in recent months, thanks primarily to a new study claiming to show the opposite—that the U.S. corn ethanol program actually produces *more* greenhouse gases than would be entailed just by making an equivalent amount of fuel using petroleum, and thus should be condemned by all right-thinking people.

Well, as the saying goes, a lie can circle the globe in the time it takes Truth to put her boots on. While it continues to be cited endlessly in the press—and was an impetus for *Time* magazine’s sensationalistic recent decision to brand biofuels a “scam”—the study is a Grade A example of junk science.

The study, which appeared in the journal *Science*^{*}, was authored by a team led by Timothy Searchinger, presently affiliated with Princeton

^{*} Timothy Searchinger *et al.*, “Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change,” *Science* 319 (February 29, 2008): 1238-1240. This study was subsequently circulated in more readable form in a policy paper issued by the German Marshall Fund, on which Searchinger was listed as the lone author.

University's Woodrow Wilson School. (Searchinger, it is worth noting, is not a scientist; he is a lawyer who worked, until recently, as a staff attorney for the Environmental Defense Fund, the organization best known for the role it played in banning the pesticide DDT in the 1970s—a ban that has resulted in tens of millions of Africans dead from malaria.) The Searchinger study offers no new data concerning the U.S. corn ethanol program, conceding—in agreement with numerous previous studies—that the ethanol program's *direct effects* will reduce the nation's greenhouse gas emissions by replacing oil with fuel derived from biomass. However, it then goes on to argue that if *indirect effects* are taken into account, including most notably the potential expansion of Third World agriculture in response to the rise of an international market for biofuels, then the overall net effect will be an increase in global greenhouse emissions. Based on a “worldwide agricultural model,” the study claims that U.S. agricultural exports will “decline sharply” because more and more American farmland will be used for ethanol—and in order to make up for the lost food supply, Latin American and African peasants will burn down forests to expand farmland. This burning, the study maintains, will put millions of tons of carbon dioxide into the atmosphere, resulting in more emissions than would have come from just burning oil-based fuels.

However, the real-world data don't back up these claims. For starters, the Searchinger study's central assumption—that the rising demand for ethanol will lead to a decline in U.S. agricultural exports—is just not true. There has been no reduction in U.S. corn exports, and the U.S. Department of Agriculture projects that corn supplies for food exports, for feed, and for other non-biofuel uses will continue to grow even as ethanol production expands.

Second, Searchinger's study relies on a flawed assumption about the scope of the U.S. corn ethanol program, one in which the U.S. will be producing 30 billion gallons of corn ethanol per year by 2015. But in the very 2007 law that mandated the increased use of biofuels, Congress put a cap on the production of *corn* ethanol—a limit of 15 billion gallons by 2015. This error in the study was pointed out in a devastating online response penned by Michael Wang, a researcher at the Argonne National Laboratory, and Zia Haq, a researcher with the U.S. Department of Energy. Searchinger, they wrote, “examined a corn ethanol production case that is not directly relevant to U.S. corn ethanol production for the next seven years.” Wang and Haq's rebuttal is especially powerful since the agricultural model that Searchinger employed was actually first developed by Wang a decade ago.

Third, *contra* Searchinger, there is no evidence that the U.S. corn ethanol program is causing arable land to be cleared elsewhere. To again quote Wang and Haq:

[Searchinger's assumption about land-use changes] is seriously flawed by predicting deforestation in the Amazon and conversion of grassland into crop land in China, India, and the United States. The fact is, deforestation rates have already declined through legislation in Brazil and elsewhere. In China, contrary to the Searchinger *et al.* assumptions, efforts have been made in the past ten years to convert marginal crop land into grassland and forest land in order to prevent soil erosion and other environmental problems.

To be clear: Deforestation is certainly happening—and was happening prior to the advent and expansion of the U.S. corn ethanol program. If it *is* accelerating now, that could be due to any number of causes, but there is simply no evidence that global biofuels investments are among them.

In addition to these specific flaws in the study's assumptions, the claim of Searchinger and his colleagues to possess a computer model capable of predicting global human behavior must be taken with a grain of salt. While it might be reasonable to suppose that Third World farmers would respond to either high fuel or food prices by clearing more land for agricultural activity, the assumption in the Searchinger study that they would do this by simply burning down their forests—thus creating a “carbon debt” that would take decades or even centuries of biofuel production to “pay back”—is purely speculative. In fact, most of the Amazon deforestation is being driven not by agriculture but by lumber interests, and should biofuel technology reach the point where either methanol or cellulosic ethanol can be adopted as an economically feasible fuel, then forestry residues would become valuable biofuel resources themselves, and the last thing Third World farmers would want to do would be to burn these enormous revenue sources. Instead they would harvest them, and as their energy content would be used to replace petroleum, there would be no significant “carbon debt.”

Do Vitamins Cause Global Warming?

Beyond such factual and logical errors, it is worth pausing for a moment to reflect on the broader philosophical implications of the Searchinger study—both its methodology and its motivation. The “indirect analysis” approach used in the Searchinger study is systematically flawed and has nothing in common with the scientific method. Using the same sort of

analysis employed by Searchinger—that is, making broad claims of global effects stemming from undemonstrated causal relationships—it is possible to “prove” practically anything. For example, you can also prove that increasing mileage standards for vehicles contributes to global warming. Consider: Every gallon of gasoline not used by a motorist saves him \$3.50 at today’s prices. He can use that money to buy other things. For example, at current prices (about \$12 per ton), \$3.50 could buy him 580 pounds of coal. Burning that coal would obviously produce far more carbon dioxide emissions than burning the 6 pounds of carbon in one gallon of gas. So higher mileage standards for cars cause global warming. Q.E.D.

That is an utterly preposterous conclusion, of course, but it approximates the Searchinger team’s approach. In fact, using indirect analysis, it is possible to show that *any* technology or policy which can be plausibly argued to confer any social benefit whatsoever will cause global warming. For example, both *tax cuts* (because they give consumers greater spending power) and *tax increases* (because they allow for expanded funding of health care and public education, which in turn contribute to longer lifespans and income growth) can be considered indirect causes of global warming. Perhaps then, we should keep taxes the same? Nope—that won’t help a bit, since relative to a potential tax cut, level taxes are a tax increase, and relative to a potential tax increase, level taxes are a tax cut. So keeping tax rates the same will cause global warming through both mechanisms—and thus possibly represents the gravest global warming threat of all.

The point isn’t simply that the Searchinger study is bunk, but that it relies upon a method that can be used to produce any conclusion desired. And the desired conclusions, in Searchinger’s case, are shaped by what you might call an ethic of “envirostasis”—the belief that the ultimate measure of the merit of any human activity or innovation is its effect on the natural environment—with any change axiomatically assumed to be deleterious. Judged by the ethic of envirostasis, the U.S. corn ethanol program is contemptible because it (allegedly) opens up market opportunities for Third World peasants—which is to say, precisely because of the humanitarian good it would do by lifting them from poverty.

Thus the cult of envirostasis turns ethics on its head. Everything good must be classed as evil, and all evil praised as good. What might be the next target—vitamins? Prior to the discovery of vitamins, millions of people—especially poor people with limited diets—were weakened or killed by nutritional deficiencies. But now, these people survive, and they collectively have a huge carbon footprint. So vitamins are bad, and needless to say, antibiotics and vaccines are much worse. But even these

indirect global warming threats pale before that posed by public sanitation and clean drinking water. Clearly then, according to the envirosstasis ethic, all such efforts are to be aborted, and medical research itself, which threatens to bring more such horrors into the world, should be proscribed.

As a classic case of where such thinking leads, consider the arguments of David Pimentel, a Cornell University entomologist. He is one of the leading opponents of ethanol, having railed against it since the early 1980s. He is cited with approval by libertarian scholars apparently unaware of the full range of his views. For Pimentel, you see, is not just opposed to ethanol. He is also opposed to beef production, to the use of pesticides and fertilizers, and to modern agriculture in general. He denounces industry, and has claimed that “an estimated 40 percent of world deaths can be attributed to various environmental factors, especially organic and chemical pollutants.” He despises immigration: he is a director of the Carrying Capacity Network, an anti-population group whose chairman is the self-professed white separatist Virginia Abernethy. In 2004, he ran for a slot on the board of the Sierra Club on a platform calling for a halt to all immigration into the United States, to the cheers of a chorus of extreme racist and neo-Nazi groups. (He was defeated.) And above all, Pimentel opposes humanity itself: he has argued that our planet can hold just 2 billion people—less than a third of the current world population—and that we need to reduce the number of souls who walk the Earth, with the U.S. population cut to 100 million through “democratic population control.”

And thus we see the ethic of envirosstasis revealed for what it really is: rank Malthusian ideology. Conservatives should oppose it for its deeply degrading anti-humanism. And liberals, too, should be wary of making common cause with it for the sake of its concern about the environment, because all of the proudest accomplishments of both modern and historical liberalism—child labor laws, minimum wage laws, public schools, libraries, urban sanitation, childhood vaccinations, public health services, rural electrification, transportation infrastructure, social security, clean air and water laws, civil rights laws, and even emancipation, popular enfranchisement, representative government, and independence from colonial rule—all indirectly contribute to carbon emissions, and thus must be rejected by the cult of envirosstasis.

The Real Ethanol Challenge

Global warming is real. According to well-substantiated measurements, average worldwide temperatures have been increasing for the past several

decades at a rate of 0.2 degrees Celsius per decade—a rate that if left unchecked for another century would bring temperatures back where they were 1,000 years ago, and might raise sea levels approximately one foot. There is solid reason to believe that this temperature rise is being driven by human carbon dioxide emissions, which are rising as the global economy expands. We will thus need to eventually get carbon dioxide emissions under control. Replacing petroleum-derived fuels with biofuels can be of great assistance in doing so, and the evidence suggests that corn ethanol already is making a contribution in that direction.

There is a real flaw in the U.S. corn ethanol program, however, and that is its size: it is much too *small* to effectively address the pressing problem of the looting of our economy by the oil cartel. To put the matter simply: It's not about the weather, it's about the money. The ethanol program is now demonstrably cutting the nation's tribute to the oil cartel by tens of billions of dollars per year. But we need to do much more. At current prices, the United States will pay nearly \$600 billion for oil imports this year, an amount coming *out* of the U.S. economy that is almost four times the size of the economic stimulus package Congress recently authorized to take from the treasury to put back *into* our economy to stave off recession. Under these circumstances, our nation's modest biofuels program just isn't enough.

We need to do more—and can. Congress should take the critical step required to break OPEC's vertical monopoly on our economic lifeblood by passing a bill mandating that all new cars sold in the United States be flexible-fueled—that is, able to run on any combination of gasoline, ethanol, or methanol. Such cars already exist and only cost about \$100 more than comparable non-flex-fuel models. By making flex-fuel a requirement for the American auto market, we will make it the international standard as well, and will for the first time force gasoline to compete at the pump against alcohol fuels all over the world.

Such a flex-fuel-vehicle standard would create a global open source fuel market that would encourage the rise of not only existing sugar and corn ethanol, but of other alcohols as well, including ethanol made from cellulosic material, and methanol, which can be made from any kind of biomass without exception—as well as from coal, natural gas, and even recycled urban trash. (At this writing, methanol is selling, without any subsidy, for \$1.50 per gallon, equivalent in energy-per-dollar terms to gasoline at \$2.80 per gallon.) By making our cars compatible with such fuels, we will enormously expand and diversify our options, protecting not just Americans but the entire world from escalating looting by the oil cartel.

So long as we do not have fuel choice, the nation will remain at the mercy of OPEC, forced to pay the tribute it dictates, giving hundreds of billions of dollars to Islamists who promote global jihad and fund the development of nuclear weapons. But once we open the fuel market, we will put a permanent constraint on the greed and power of our enemies.

And under those conditions, we will create markets for biofuels derived from Third World farm products, opening up income opportunities for billions of poor people around the world—just what the envirostasists fear most. We will, in effect, redirect hundreds of billions of dollars from the oil cartel to the world's agricultural sector, creating an enormous engine for global development. That would be a grand affirmation of the human good and a powerful rebuke to both the Malthusians and Islamists, whose common program is not only high oil prices, but the stifling of human initiative and the crushing of human aspirations in order to preserve a fixed natural or social order.

Instead of financing terrorism, our energy dollars could be used to fund world development. Instead of selling control of our banks and media to Saudi princes, we could be selling tractors to Africa. Instead of buying arms for our enemies and chains for ourselves, we could be building a world of prosperity and freedom. Instead of paying for death, we could be helping to spread life.

This, and not retreat from the small but promising start the corn ethanol program has made, should be our course. We should not be deterred from it by misleading propaganda about food prices, mistaken apprehensions about subsidies, or Malthusian quackery masquerading as science.