

The Politics of Renewable Energy: Unintended Consequences of Biofuel Policies

Written by Robert Rapier

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ROBERT RAPIER, FEB 10 2008

Government policies often generate unintended consequences. This has turned out to be the case with the aggressive biofuel policies pursued over recent years by the European Union and the United States. While the EU was developing action plans and setting targets to promote biofuels, many states in the U.S. – especially those with high levels of corn (maize) production – were enforcing mandates to turn that corn into ethanol.

Superficially, this may sound like a great idea. The world obviously can't continue forever down the path of fossil fuels. Global Warming is a serious concern worldwide. Much of the remaining fossil fuel resources are located in areas hostile to the West. What better way to address these concerns than a movement toward renewable fuels? Furthermore, if the market won't encourage that move because of poor economics, wouldn't it make sense for governments to be proactive and force a move to biofuels? Of course this is the path we have taken, but we didn't sufficiently consider the potential consequences before doing so.

Criticisms

While corn farmers and palm oil plantation owners have been elated by the policies, critics have warned all along about the short-sightedness of these policies. Some, like Cornell Professor David Pimentel and Berkeley Professor Tad Patzek, argued that a full life-cycle analysis showed that most biofuels are actually net energy negative – that is it takes more fossil fuel energy to produce biofuels like ethanol than is returned in the process. This assertion, if true, would imply that expansion of biofuels would actually increase greenhouse gas emissions. However, Professors Pimentel and Patzek have their own critics, who assert that their studies made flawed assumptions.

But the criticisms of the rush into biofuels didn't stop there. Some argued that the diversion of grains and edible oils away from food and toward biofuels had the potential to starve the poor. The United States Department of Agriculture, longtime staunch supporters of the biofuels expansion, published a study that concluded that the policies of the U.S. and the EU would raise prices across the food sector. Lester Brown, the president of the Earth Policy Institute – a group that advocates environmental sustainability – famously noted in a Washington Post opinion piece that “the grain required to fill a 25-gallon SUV gas tank with ethanol would feed one person for a full year.” Brown further wrote:

“Plans for new ethanol distilleries and biodiesel refineries are announced almost daily, setting the stage for an epic competition. In a narrow sense, it is one between the world's supermarkets and its service stations. More broadly, it is a battle between the world's 800 million automobile owners, who want to maintain their mobility, and the world's 2 billion poorest people, who simply want to survive.”

Thus, at best the critics suggested that the impact of biofuels policies would increase food prices. Worse, biofuel mandates may be mandates for starving the poor.

Additional criticisms emerged. It soon became clear that the new policies were resulting in land usage changes. Grassland was turned into farmland, and tropical forests into palm plantations. As a result of EU-fueled demand for

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palm oil, Indonesia was destroying peat bogs to make room for new plantations, and this greatly increased their greenhouse gas emissions. This move reportedly made Indonesia the third largest greenhouse gas polluter.

In the U.S., former ethanol proponents such as Dan Kammen and Alex Farrell of the Energy and Resources Group at UC Berkeley have recently abandoned their position that corn ethanol is environmentally beneficial. In a January 12, 2008 memo to California regulators attempting to tackle greenhouse gas emissions in the transport sector, they wrote:

“Simply said, ethanol production today using U.S. corn contributes to the conversion of grasslands and rainforest to agriculture, causing very large GHG emissions. Even if only a small fraction of the emissions calculated in this crude way [through land use change] are added to estimates of direct emissions for corn ethanol, total emissions for corn ethanol are higher than for fossil fuels.”

A pair of studies in the current issue of *Science* was apparently the basis for their change of heart. The *Wall Street Journal* reported on the studies:

While the U.S. and others race to expand the use and production of biofuels, two new studies suggest these gasoline alternatives actually will increase carbon-dioxide levels.

A study published in the latest issue of *Science* finds that corn-based ethanol, a type of biofuel pushed heavily in the U.S., will nearly double the output of greenhouse-gas emissions instead of reducing them by about one-fifth by some estimates.

“Even if we’re dramatically wrong, it’s hard to get to a result that says you get a benefit over 50 years,” said Timothy Searchinger, a researcher at Princeton University and a co-author of the paper on corn-based ethanol.

In the second study, researchers found that . . . draining and clearing peatlands in Malaysia and Indonesia to grow palm oil emits so much CO₂ that palm biodiesel from those fields would have to be burned for more than 420 years to counteract it.

I made my own criticisms, on several fronts. I criticized what I felt were misleading energy balance studies, which inflated the attraction of corn ethanol. I criticized the morality of using food for fuel. I challenged venture capitalist Vinod Khosla, who was promising the world something I didn’t feel that he could deliver, and in the process wasting taxpayer money and precious time. I also challenged the hype of cellulosic ethanol, pointing out issues that the critics were ignoring. As I was warning about the folly of U.S. ethanol policy, I also cautioned over the irrational exuberance of ethanol investors. (I should also note that I wrote several essays in favor of certain ethanol applications. See [here](#), [here](#), and [here](#).)

The World Responds

The criticisms didn’t go unnoticed. The Chinese recognized the threat to their food supplies, and put a halt to new corn ethanol projects, noting that “the current maize-ethanol production capacity has far surpassed what the corn output can provide as an important grain resource.” The European Union began to recognize the dangers. EU Environment Commissioner Stavros Dimas said that “the EU had initially underestimated the danger to rainforests and the risk of forcing up food prices from its policy of setting binding targets for the use of biofuels.” The EU further announced that they would be issuing a certification scheme and promised a “clampdown on biodiesel from palm oil which is leading to forest destruction in Indonesia.”

The U.S. government continued to show short-sightedness, however, and mandated an enormous expansion of the ethanol program. To understand this, one has to understand that ethanol policy in the U.S. is dictated almost entirely by politics, and not by science. Because the source of U.S. biofuels is largely domestic, the issue impacts upon a large segment of voters. Former presidential candidate Bob Dole once explained the issue to oilman T. Boone Pickens: “Bob Dole once told me that there are 42 senators from farm states and that pretty much means the

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government is going to be into ethanol.”

The prominence of the Iowa presidential caucuses also plays a major role. The Iowa caucuses are held prior to the elections in most other states, and presidential candidates hope to do well there and gain momentum going into the rest of the campaign season. Since Iowa is the heart of ethanol production country in the U.S., candidates pander to the voters there who have greatly benefited from U.S. ethanol policies. In order to win Iowa, you must support ethanol policy. Presidential hopefuls Hillary Clinton and John McCain provide perfect examples of the Iowa influence. Long time critics of U.S. ethanol policy – both changed their positions during the most recent presidential campaign. In 2003, McCain had come out strongly against U.S. ethanol policy:

“Ethanol is a product that would not exist if Congress didn’t create an artificial market for it. No one would be willing to buy it. Yet thanks to agricultural subsidies and ethanol producer subsidies, it is now a very big business – tens of billions of dollars that have enriched a handful of corporate interests – primarily one big corporation, ADM. Ethanol does nothing to reduce fuel consumption, nothing to increase our energy independence, nothing to improve air quality.”

Contrast that with his statements in 2006 as he prepared for a presidential run:

“I support ethanol and I think it is a vital, a vital alternative energy source not only because of our dependency on foreign oil but its greenhouse gas reduction effects.”

Thus, while the world wakes up to the overall social and environmental ramifications of a broad expansion of ethanol policy, the U.S. is unlikely to deviate from the current policy. If there was a major Midwestern drought that caused the corn crop to fail, it might cause a reevaluation of the policy as corn supplies disappeared. But barring some sort of catastrophe that impacts ordinary Americans, the policy of turning food into fuel will continue unabated in the U.S.

Lessons Learned

The consequences from these biofuel policies was foreseen by a number of scientists. However, their criticisms were often shouted down, and their motives were questioned by some proponents. In the U.S., proponents cast the ethanol debate in terms of national security, energy independence, and the benefits to farming communities. Opponents were cast as being anti-farmer and un-American. This had the unfortunate effect of largely quelling the public debate as these policies were being unveiled and expanded.

Yet these debates must take place, preferably before a well-intentioned policy begins to have such undesirable consequences. Our political leaders need to carefully consider not only the arguments of proponents, but they also need to give the critics a fair hearing. Had this been done, we may have been able to focus our attention on renewable options that do not compete with our food supply.

Robert Rapier has a master’s degree in chemical engineering, and bachelor’s degrees in chemistry and mathematics. He has over 15 years of experience in the petrochemicals industry, including experience with cellulosic ethanol, gas-to-liquids (GTL), refining, and butanol production. He holds several U.S. and international patents, and is currently involved in several alternative energy projects. Robert is the author of the *R-Squared Energy Blog*.