

The false hope of a biofuel free lunch

The recent frenzy in the U.S. over so-called renewable energy from biofuels, particularly corn-based ethanol, is yet one more example of why government should not be in the business of choosing technologies to solve social problems. Just like the failed synthetic fuels program spawned by the 1970s energy crisis, the federal government once again is leading us down a technological dead end while failing to address the real energy issues we all face.

The problem is that policy-makers have forgotten the basic biophysical facts behind the energy in biofuels. Through the miracle of photosynthesis, plants are able to convert the energy of sunlight into chemicals containing energy that can be made useful for humans. Indeed, this amazing process is the source of all the energy in oil, coal and natural gas. However, the wonder of that process does not mean it is sensible to grow corn or other crops and convert that biomass into ethanol to burn in place of gasoline.

There are two problems here. First, there simply are not enough places on the planet to grow enough crops to make enough ethanol to replace the amount of fossil fuels used today in human society. In fact, when the fossil fuels we use today were created millions of years ago, it took several hundred years of plant growth to produce the fossil fuels we burn in just one year. Second, when we grow crops and convert them into ethanol it takes lots of gasoline, natural gas and coal to accomplish this feat. There is debate in the scientific literature whether there is any energy gain at all in the production of ethanol from corn. Some credible studies show that it takes more energy to grow and process the corn than is contained in the ethanol at the end. Even the most optimistic studies show a very modest net energy gain. At best, ethanol is barely a "renewable" energy source with little or no benefit in terms of greenhouse gas emissions or in terms of reducing our dependence on fossil fuels. This explains why it takes a 51-cent per gallon federal subsidy and numerous additional state subsidies to make it worthwhile for anyone to produce ethanol this way. Your income taxes pay for others to make and burn ethanol.

Some analysts see corn-based ethanol as just a transition to "cellulosic" ethanol, but many of the same problems exist here. Most fundamentally, the flow of energy through plant systems is simply not large enough to replace fossil fuels. Additionally, any increased reliance on biofuels means that we divert precious farmland away from food production for the human population that continues to grow at a

rate of nearly 80 million people a year. And whether it be for fuel or food, human use of more of the globe landscape for domesticated plants means we will see accelerating threats to other plant and animal species. Energy for food or fuels consumed by humans is not available for our non-human companions on this planet.

Why does government policy encourage such a flawed approach to energy policy with direct subsidies and massive spending on research and development programs? Why did we not learn from the failed synthetic fuels programs of the 1970s? There are three reasons, two of which come from what economists call "rent seeking behavior." Rent seeking is when individuals and firms use the public-policy process to generate direct benefits, such as large direct subsidies. First, the most obvious beneficiaries of the ethanol craze are corn farmers and large agribusiness firms that buy and sell corn and other agricultural products. The subsidies have worked and there is an explosion of new ethanol factories in the Midwest. Whether or not this is good energy policy, it certainly has been good for corn farmers, giving new meaning to the phrase "corn-fed pork."

Second, Midwestern universities and other research institutes have also prospered in this biofuels frenzy as the federal government pours millions of dollars into research and development programs. Careers are made, campuses grow, whether or not energy policy improves — more rent seeking behaviors.

Third, you and I are equally to blame. Americans want to believe that our energy challenges can be solved without any change in our habits or lifestyles. As long as the government tells us that there is a "renewable energy" source, we believe can continue to consume energy with abandon. We can drive ever bigger vehicles, ever more miles. We can heat and cool larger houses and live wherever we choose. This is the false hope of a free lunch from biofuels.

No matter how technologically capable we are, we cannot overcome the laws of nature. Biofuels are not a renewable energy source that will replace our dependence on fossil fuels. Believing so only continues to distract us from the real work at hand. If we were to put just a fraction of attention, creativity and funding into energy conservation that is going into biofuels, we would move much more quickly to address the energy problems at hand.

Mark W. Anderson is the coordinator of the Ecology and Environmental Sciences Program at the University of Maine.