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## Can't See the Forest for the Biofuels

By Brandon Keim August 16, 2007 | 1:00:00 PM Categories: [Climate](#), [Energy](#), [Environment](#), [Sustainability](#)



According to a new study, cutting down forests to grow crops for fuel causes more environmental damage than using biofuels can ever offset.

It's a sobering message at a time when energy crops, once a hippie dream, have gone mainstream green. Around the world, governments and industries have pledged to replace climate-fouling fossil fuels with fuel made from plants. But is it possible that we can't see the CO<sub>2</sub> forest for the trees?

Writing in the journal *Science*, [Renton Righelato](#) of the World Land Trust, a British conservation group, and [Dominick Spracklen](#), an environmental researcher at the University of Leeds, compared the carbon dioxide savings offered by using land for biofuel crops or forests.

The worst practice for the environment, they found, is making space for biofuel crops by clearing forests. Inevitably, forests absorb more CO<sub>2</sub> than is saved by biofuel crops grown where they once stood.

"People feel they're saving the planet. They're not. The real issue we should be concerned with is reducing consumption and improving fuel efficiency," said Righelato. "Biofuels are essentially being used as a way of avoiding the real problem: reducing the use of fossil fuels."

Biofuel demand from places like Europe and North America has prompted deforestation in the developing world.

The European Union has [pledged](#) to replace 20 percent of transport fuels with biofuels by 2020. By that time, the United States [plans](#) on using biofuels for about 15 percent of transportation power.

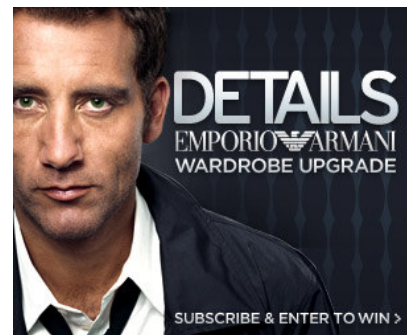
To meet those goals with today's technologies, half of US and EU food crop land would be devoted to energy crops, estimates the International Energy Authority. That's not about to happen, so the demand is being displaced onto the developing world -- with potentially disastrous results.

In Indonesia, for example, environmentalists estimate that foreign biofuel demand will drive energy companies to clear the country's remaining peat rainforests, a valuable CO<sub>2</sub> sink. The resulting slash-and-burn could release 50 billion tons of CO<sub>2</sub> -- nearly a decade's worth of US greenhouse emissions -- into the atmosphere.

Brazil has designated nearly half a billion acres of forests, grassland and marshes as "degraded" areas suitable for conversion to farming. While the entire Alaska-sized area won't be cleared, much of it could be planted with soybeans, the staple of



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that country's biofuel efforts.

By correlating soybean prices with [satellite images](#), NASA has shown that biofuel demand has led to the yearly destruction of a near Rhode Island-size swath of Amazon rain forest.

"I don't think people on the whole, the ones I've spoken to in government organizations, appreciate the huge loss of carbon dioxide sequestration potential you get from destroying forests," said Righelato.

[Mac Post](#), a biofuel expert at the Oak Ridge National Laboratory, agreed. "If you're clearing high-content ecosystems to offset CO<sub>2</sub> emissions, you're digging a hole. By what I can tell, it's a pretty deep hole, and you may not climb out," he said.

In the United States, the forests were cleared long ago. Here, the fuel-versus-forest question centers on pastures not being used to grow anything.

According to the Department of Energy's [Billion Ton Vision](#) (.pdf), which plots a course for supplying 30 percent of US transportation power with biofuel by 2030, the United States has 67.5 million acres of unused cropland. To meet those goals, 25 million acres -- an area the size of Kentucky -- would be dedicated to biofuel crops.

So far, no one is discussing converting those pastures into forests.

"We're more likely to see energy crops moving back into pastureland," said [Robert Perlack](#), lead author of the Billion Ton Vision.

Ideally, Perlack said, both corn -- the most common and least energy-efficient of current biofuel crops -- and empty fields would give way to perennial plants, including fast-growing trees like willow and poplar. They have extensive root systems that keep some CO<sub>2</sub> in the ground after harvesting.

In temperate climates, the trees could save as much carbon dioxide as planting new forests, write Righelato and Spracklen. But Righelato said the biofuel focus still distracts people from the real problem: how much fuel we use, and how carelessly we burn it.

Even with ostensibly environmentally-friendly Democrats taking political power in the US, this hasn't happened.

When proposing sweeping energy legislation earlier this month, the US House of Representatives dropped a requirement that automobiles get 35 miles per gallon of gasoline. The current average is 22, an efficiency lower than that of the original Model T Ford, and half of what China will require next year.

*Images: Burning and deforestation of the Amazon forest to make grazing lands (NASA LBA-ECO Project) and clearings made in the Amazon Rainforest in the state of Mato Grosso, Brazil, between 2001 and 2006 (Robert Simmon, based on data provided by the NASA/GSFC/METI/ERSDAC/JAROS, and U.S./Japan ASTER Science Team)*

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Amazing Pass!

How ever! did the, Forest,Paper, Pulp, Industry.

Slip this over to Bio/ethanol, fuels debate?.

The wood,paper,pulp,and forest, Has been trying to strip,not only North America[bare] but did so; even more aggressively in South America?.{with satellite images/to prove it}

I guess!, the Forest,Wood, Paper,and Pulp, Industry [science's] must have Proved that we do not need any air to breath!

A bleak and barren waste Land for One and All!

Posted by: [willy j](#) | Aug 16, 2007 12:16:38 PM

biofuels are nothing more than a crutch. Worse, it is being pushed for the wrong reasons. It can and will be useful but it shouldn't be THE alternative. It should be used in applications where other systems won't work. We should be focused on real green technology, and that isn't biofuels.

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Posted by: **Kouroth** | Aug 16, 2007 1:54:23 PM

great job liberals. the problem with a many of these environmental ideas are the ones that pushing them care less about making the ideas work in the real world.  
let's all get our energy from ethanol  
let's all have universal health care  
let's all make a "living wage"  
let's all have cheap goods  
let's all open the border to outsiders  
let's all have cheap housing  
the details and effects seem to not matter to some people. i'm not against fuel efficiency or alternative fuels but at the very least the people pushing for these changes should consider how to make it work in the real world. if some of these liberal groups had to start business to make their ideas work the ideas probably would be more successful but because of idealistic dreaming people will probably steer away from ethanol.

Posted by: **bob** | Aug 16, 2007 5:02:55 PM

Wikipedia says:  
"According to Ford Motor, the Model T had fuel economy on the order of 13 to 21 mpg."  
So believe it or not we have improved our mileage a bit since then.

Posted by: **Grant** | Aug 16, 2007 6:08:31 PM

Wikipedia says:  
"According to Ford Motor, the Model T had fuel economy on the order of 13 to 21 mpg."  
So believe it or not we have improved our mileage a bit since then.

Posted by: **Grant** | Aug 16, 2007 6:08:48 PM

Wikipedia says:  
"According to Ford Motor, the Model T had fuel economy on the order of 13 to 21 mpg."  
So believe it or not we have improved our mileage a bit since then.

Posted by: **Grant** | Aug 16, 2007 6:08:53 PM

well, yes, making things work in the real world is definitely the problem. although i'm not sure that liberals are the only ones who fail in that endeavour nowadays...

but, that very question must be asked about biofuels. and, in my opinion, it hasn't been. instead, a juggernaut is being created, without the slightest concern or question. i get the feeling that the conversation pretty much went like this:

"so we have the technology to turn corn into a flammable liquid? great, lets run all the vehicles in america on this stuff. get to work."

and so, without analyzing if that made any damn sense at all, the snowball started rolling.

there's any number of questions that biofuel hasn't answered yet:

1. why corn? why subsidize corn so damn much? if there's going to be subsidies, why not subsidize cellulosic ethanol?
  2. is there really enough arable land to fill all the gas tanks of america with biofuel? hmmm, maybe someone should look into that.
  3. is there really a net benefit to the environment (meaning us) by using all biofuel, if that's what this country decides to do?
  4. why the hell are we still using internal combustion engines that run on minature explosions created by lighting hard to produce flammable liquids? is that really the only answer for moving human asses from one point to another, now and forever, amen? so therefore, isn't switching to a better flammable liquid really just a crutch? here's an idea, increase dramatically average mpg ratings in cars, and then switch to biofuels. what's the benefit of a 2007 silverado king cab getting 14 mpg of ethanol? zip, that's what.
  5. has anyone thought of smart ways to use biofuels? what if biofuels were used very specifically, for very specific fleets of vehicles? what if all farm equipment - tractors, trucks, combines, etc. - were powered by ethanol? hell, the farmers are right near the ethanol plant - all they're doing is reducing their operating costs if they can grow their own fuel. what if city buses were to use biodiesel? what if all big rigs in america were to switch to biodiesel? how about JP8, jet fuel? is there any research being done on that? the point i'm trying to make is that biofuels are not the same thing as petroleum fuels. it's a different animal. so why are we treating them the same way? and using them the same way? why not think about smarter ways to use it?
- yeah, there are some definite benefits to growing our own fuels. i do not dispute that at all. ethanol even burns with a little less CO2 emissions. great. but this is the twenty first century, and here we are just creating another flammable liquid like the last one, creating all the same problems all over again as we had the last century. we could turn biofuels into a valuable tool, but instead we're just turning into a crutch...

Posted by: **this thing here** | Aug 16, 2007 7:28:46 PM

this thing here: you raise a lot of common and fair questions. I can help.

"...and so, without analyzing if that made any damn sense at all, the snowball started rolling."

A ton of analysis has gone into the development of American ethanol; the industry has been working on its model for 20 years. Of course, making "any damn sense" is subjective to some. The environmental and economic benefits of ethanol have been proven. But no one in the industry will tell you it's a silver bullet. They know better than anyone what their limits are: about 16 million gallons annually produced from corn by 2016.

"why corn? why subsidize corn so damn much? if there's going to be subsidies, why not subsidize cellulosic ethanol?"

Corn is the most abundant crop grown in America; the infrastructure to raise and harvest it has been in place and improved for decades. Just as key: corn is rich in starch that can be easily converted to simpler sugars that can be fermented to ethanol. Also, the gov't has subsidized cellulosic ethanol (it's the only way to get it off the ground, as the necessary technology and infrastructure investments are huge) in the form of hundreds of millions of dollars of DOE grants this year alone.

"is there really enough arable land to fill all the gas tanks of america with biofuel? hmmm, maybe someone should look into that."

No. Someone already did look into that. But again, no one is saying biofuels will replace our entire, gluttonous daily appetite for fossil fuels. That said, ethanol alone displaces the use of around 200 million barrels of oil a year. That's a small percentage of our annual consumption, but that's one hell of a lot of oil nevertheless.

"is there really a net benefit to the environment (meaning us) by using all biofuel, if that's what this country decides to do?"

Yes and no: ethanol burns cleaner and reduces overall GHG emissions; but there's no way all of us can

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use "all biofuel. See the DOE/EPA/USDA research on the issue.  
 "why the hell are we still using internal combustion engines."  
 Again, installed infrastructure: according to the USDOT, there are 250 million+ cars on the road as you read this. Until hydrogen or Star Trek teleporters go commercial, we're stuck with those cars. And all those internal combustion engines.  
 "isn't switching to a better flammable liquid really just a crutch?"  
 You say "crutch," I say "tip of the spear." Biorefining is a maturing industry whose finest contribution to the larger portfolio of energy alternatives is in its infancy. But just wait 'til it grows up. Refining widely available crops like corn or soy is a critical step to develop, perfect and commercialize future, greener technologies. That'd be cellulosic ethanol, among others.

Posted by: **G.B. Veerman** | Aug 17, 2007 12:05:36 AM

Biofuels are just CO2 neutral. You have to bring the stuff to the south pole and refrigerate the carbon.  
<http://modernfuturevision.blogspot.com/2007/05/trees-at-south-pole.html>

Posted by: **sr** | Aug 17, 2007 4:35:08 AM

"The real issue we should be concerned with is reducing consumption and improving fuel efficiency"  
 With China, India and Brazil growing at 5-10%/year I don't expect that reducing consumption in the developed countries will do much for the CO2 emissions.  
 We need a new technology.  
 Some civilizations have tumbled when resources were depleted (with their technology).  
 We have now just one civilization, the global one. I hope we can shift the course of events soon...

Posted by: **Marco Costa** | Aug 17, 2007 7:18:01 AM

How about:  
 6. Why are we getting biofuels from crops anyway? Algae, etc?

Posted by: **c!** | Aug 17, 2007 9:54:41 AM

good points all around, but reality exists that we are still fighting a war instead of changing infrastructure...  
<http://troyhelming.com>  
<http://krystal-planet.com>  
 we could be there in a matter of years. the rainforests make the world what it is today. it makes me sick to read and think about it... the only good thing to come of war is that we are reducing our population a little bit. that is also sick, but so is a world of 6.6 billion people consuming without thinking about the future. we suck and deserve a cataclysm. i just hope the energy crisis crumbles sooner rather than later so all the non-believers can witness it. food will not be shipped, people will not be able to make it to work... and we thought the depression was bad... better go buy a horse and ranch now. they will be the people who survive. read up on survivalist tactics. i have spoken, thus it shall be...

Posted by: **djclintoris** | Aug 17, 2007 11:00:08 AM

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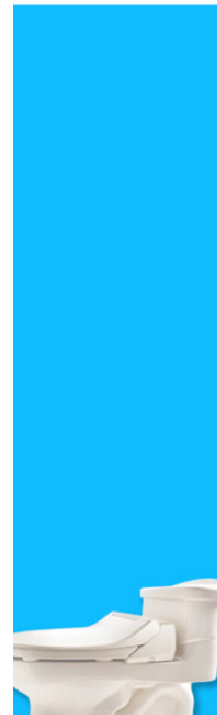
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