

Nature's Own Fuel Could Save Us from the Greenhouse Effect and Electric Grid Failure

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Hemp fuel and other biofuels could reduce carbon emissions while saving the electric grid, but they're often overlooked for more expensive, high-tech climate solutions.

On July 14, the European Union unveiled sweeping climate change and emissions targets that would, [according to Gulf News](#), mean “the end of the internal combustion engine”:

The commission's draft would reduce permitted emissions from new passenger cars and light commercial vehicles to zero from 2035 – effectively obliging the industry to move on to battery-electric models.

While biofuels are a less high-tech, cheaper and in many ways more effective solution to our dependence on petroleum, the United States and other countries are discussing similar plans to the EU's and California is already on board. But in a recent [article in the Los Angeles Times](#) and [related video](#), Evan Halper argues that we may be trading one environmental crisis for another:

The sprint to supply automakers with heavy-duty lithium batteries is propelled by climate-conscious countries like the United States that aspire to [abandon](#) gas-powered cars and SUVs. They are racing to secure the materials needed to go electric, and the Biden administration is under pressure to [fast-track](#) mammoth extraction projects that threaten to unleash their own environmental fallout.

Extraction proposals include vacuuming the ocean floor, disturbing marine ecosystems; and mining Native American ancestral sites and pristine federal lands. Proponents of these proposals argue that China controls most of the market for the raw material refining needed for the batteries, posing economic and security threats. But opponents say the negative environmental impact will be [worse than the oil fracking](#) that electric vehicles are projected to replace.

Not just the batteries but the electricity needed to run electric vehicles (EVs) poses environmental concerns. Currently, generating electric fuel [depends heavily on non-renewable sources](#). And according to a March 2021 report from the Government Accountability Office, electric vehicles are making the electrical grid [more vulnerable to](#)

[cyber attacks](#), threatening the portions of the grid that deliver electricity to homes and businesses. If that is true at current use levels, the grid could clearly not sustain the load if all the cars on the road were EVs.

Not just tribal land residents but poor households everywhere will bear the cost if the proposed emissions targets and EV mandates are implemented. [According to one European think tank](#), “average expenses of the poorest households could increase by 44 percent for transport and by 50 percent for residential heating.” As [noted in Agence France-Presse](#), “The recent ‘yellow vest’ protests in France demonstrated the kind of populist fury that environmental controls on motoring can provoke.”

People who can barely make ends meet cannot afford new electric vehicles (EVs), and buying a used EV is risky. If the lithium battery fails, replacing it [could cost](#) as much as the car itself; and repairs must be done by pricey dealers. No more doing it yourself with instructions off the Internet, and even your friendly auto repair shop probably [won't have the tools](#). Except for the high-end Tesla, auto manufacturers themselves are largely [losing money](#) on EVs, due to the high cost of the batteries and low consumer demand.

Off the Electric Grid with Clean Biofuel

Whether carbon dioxide emissions are the cause of climate change is [still debated](#), but gasoline-fueled vehicles do pose environmental hazards. There is an alternative to gasoline that does not require sending all our combustion engine vehicles to the junkyard. This is alcohol fuel (bioethanol). Not only are greenhouse gas emissions from ethanol [substantially lower](#) than from gasoline, but as detailed in [a biofuel “explainer”](#) on the website of the Massachusetts Institute of Technology:

As we search for fuels that won't contribute to the [greenhouse effect](#) and climate change, biofuels are a promising option because the carbon dioxide (CO₂) they emit is recycled through the atmosphere. When the plants used to make biofuels grow, they absorb CO₂ from the air, and it's that same CO₂ that goes back into the atmosphere when the fuels are burned. In theory, biofuels can be a “carbon neutral” or even “carbon negative” way to power cars, trucks and [planes](#), meaning they take at least as much CO₂ out of the atmosphere as they put back in.

A major promise of biofuels is that they can lower overall CO₂ emissions without changing a lot of our infrastructure. They can work with existing vehicles, and they can be mass-produced from biomass in the same way as other biotechnology products, like chemicals and pharmaceuticals, which are already made on a large scale.... Most gasoline sold in the U.S. is mixed with 10% ethanol.

Biofuels can be created from any sort of organic commercial waste that is high in carbohydrates, which can be fermented into alcohol locally. Unlike the waste [fryer oil and grease used to generate biodiesel](#), carbohydrates are supplied by plants in abundance. Methanol, the simplest form of alcohol, can be made from any biomass - anything that is or once was a plant (wood chips, agricultural waste of all kinds, animal waste, etc.). In the US, 160 million tons of trash ends up in landfills annually. Estimates are that this landfill waste could be converted to 15-16 million gallons of methanol.

In [the third in a series of national assessments](#) calculating the potential supply of biomass in the United States, the US Energy Department concluded in 2016 that the country has the

future potential to produce at least one billion dry tons of biomass resources annually without adversely affecting the environment. This amount of biomass could be used to produce enough biofuel, biopower, and will bioproducts to displace approximately 30% of 2005 U.S. petroleum consumption, said the report, without negatively affecting the production of food or other agricultural products.

Energy Independence

A documentary film called [Pump](#) tells the tale of the monopolization of the auto fuel industry by the petroleum cartel, and how that monopoly can be ended with a choice of biofuels at the pump.

Henry Ford's first car, built in 1896, ran [100% on alcohol fuel](#), produced by farmers using beets, apples, corn and other starchy crops in their own stills. He envisioned the family piling into the car and driving through the countryside, fueling up along the road at independent farms. But alcohol [was burdened with a liquor tax](#), and John D. Rockefeller saw a use for the gasoline fuel that was being [discarded as a toxic waste product](#) of the kerosene market he had cornered. In 1908, Ford accommodated Rockefeller's gasoline fuel by building [America's first "flex-fuel" car](#), the Model T or "Tin Lizzie." It could be made to [run on either](#) gasoline or ethanol by adjusting the ignition timing and air fuel mixture. Rockefeller then blocked competition from Ford's ethanol fuel by using his power and influence to [help pass Prohibition](#), a Constitutional amendment banning the sale and transport of alcohol.

The petroleum monopoly was [first broken in Brazil](#), where most cars are adapted to run on bioethanol made from sugar cane. Existing combustion engines can be converted to use this "flex fuel" with simple, [inexpensive kits](#). The Brazilian biofuel market dates back to the oil crisis of the 1970s, when gas had to be imported and was quite expensive. With the conversion to biofuels, Pres. Luiz Inácio Lula da Silva achieved national energy independence, giving a major boost to the struggling Brazilian economy.

The U.S. push for biofuels was begun in California in the 1980s, when Ford Motor Company was enlisted to design a flex fuel car to help reduce the state's smog problem. But again [the oil industry lobbied against it](#). They argued that bioethanol, which in the U.S. is chiefly made from corn, was competing for corn as a foodstuff at a time when food shortages were a major concern.

David Blume counters that it is not a question of "food or fuel" but "[food and fuel](#)." Most U.S. corn is grown as livestock feed, and the "distillers grains" left after the alcohol is removed are more easily digested by cows than unprocessed grain. Distillers grains have another advantage over hay as a livestock feed: its easier digestion [reduces the noxious cow emissions](#) said to be a significant source of greenhouse gases.

Fuel from a Weed: The Wide-ranging Virtues of Hemp

Opponents, however, continue to raise the "[food versus fuel" objection](#), and they claim that biofuels from corn are not "carbon neutral" when the steps used to create them are factored in. [Even the fertilizers](#) needed to grow them may emit CO2 and other greenhouse gases. But corn is not the only biofuel option. There are plants that can grow like weeds on poor soil without fertilizers.

Industrial hemp – the non-intoxicating form of cannabis grown for fiber, cloth, oil, and many other purposes – is [a prime candidate](#) not just for fuel but to help save the environment. Hemp has been [proven to absorb more CO2](#) per hectare than any forest or commercial crop, making it the ideal carbon sink. It can be [grown on a wide scale on nutrient poor soils](#); it grows remarkably fast with almost no fertilizer or irrigation; and it returns around 70% of the nutrients used in the growth cycle back to the soil. Biofuels usually require substantially more water than fossil fuels, but hemp needs roughly half the amount needed for corn. Hemp can also be used for “bioremediation” – the restoration of soil from toxic pollution. It helps [remove toxins](#) and has been used by farmers to “cure” their fields, even from radioactive agents, metals, pesticides, crude oil, and toxins in landfills.

An analysis [published in the journal Science](#) in 2019 concluded that a worldwide tree planting program could remove two-thirds of all the CO2 emissions that have been pumped into the atmosphere by human activities. As [reported in The Guardian](#) in 2019, one trillion trees could be restored for as little as \$300 billion – “by far the cheapest solution that has ever been proposed.” The chief drawback to that solution is that trees grow slowly, requiring 50 to 100 years to reach their full carbon sequestering potential. Hemp, on the other hand, is [one of the fastest CO2-to-biomass conversion tools](#) available, growing to 13 feet in 100 days. It also requires much less space per plant than trees, and it can be grown on nearly any type of soil without fertilizers.

In a 2015 book titled “[Cannabis Vs. Climate Change](#),” Paul von Hartmann notes that hemp is also one of the richest available sources of aromatic terpenes, which are known to [slow climate change](#). When [emitted by pine forests](#), terpenes help to cool the planet by bouncing energy from the sun back into space. In a mature hemp field, the temperature on a hot day can be 20 degrees cooler than in surrounding areas.

Reviving an American Staple

Hemp has many uses besides fuel. Long [an American staple](#), its cultivation was mandated in colonial America. It has been used for centuries in pharmaceuticals, clothing and textiles; it is an excellent construction material; its fiber can be used to make paper, saving the forests; and hemp seeds are , providing protein equivalent by weight to beef or lamb.

The value of industrial hemp has long been known by the U.S. government, which produced an informational film in 1942 called “[Hemp for Victory](#)” to encourage farmers to grow it for the war effort. Besides its many industrial uses, including for cloth and cordage, the film detailed the history of the plant’s use and best growing practices.

Henry Ford [used hemp as a construction material](#) for his Model T, and [Porsche is now using hemp-based material](#) in the body of its 718 Cayman GT4 Clubsport track car to reduce its weight while maintaining rigidity and safety. “Hempcrete” (concrete made from hemp mixed with lime) is a “green” building material used for construction and insulation, including for building “[tiny homes](#).”

Hemp can replace so many environmentally damaging industries that an April 2019 article in *Forbes* claimed that “[Industrial Hemp Is the Answer to Petrochemical Dependency](#).” The authors wrote:

[O]ur dependency on petrochemicals has proven hard to overcome, largely because these materials are as versatile as they are volatile. From fuel to plastics to textiles to

paper to packaging to construction materials to cleaning supplies, petroleum-based [products](#) are critical to our industrial infrastructure and way of life.

... Interestingly, however, there is a naturally-occurring and increasingly-popular material that can be used to manufacture many of the same products we now make from petroleum-derived materials That material is hemp.

... The crop can be used to make everything from biodegradable [plastic](#) to [construction](#) materials like flooring, siding, drywall and insulation to paper to clothing to soap to [biofuels](#) made from hemp seeds and stalks.

The authors note that while hemp was [widely grown](#) until a century ago, the knowledge, facilities and equipment required to produce it efficiently are [no longer commonly](#) available, since hemp farming was banned for decades due to its association with the psychoactive version of the plant.

Fueling a Rural Renaissance

In an effort to fill that vacuum, a recent initiative in California is exploring different hemp varieties and growing techniques, in the [first extensive growing trials](#) for hemp fiber and grain in the state since the 1990s. The project is a joint effort among the World Cannabis Foundation, hemp wholesaler Hemp Traders, and Oklahoma-based processor Western Fiber. The Pennsylvania-based Rodale Institute, a nonprofit that supports research into organic farming, has also partnered on a USDA-supported research project on the use of hemp in the development of biochar (charcoal produced by firing biomass in the absence of oxygen). On July 31, the World Cannabis Foundation will host a [field day](#) and factory tour in Riverdale, California, where an old cotton gin has been converted to hemp textile manufacture. The event will also feature presentations by a panel of hemp experts.

How to decarbonize 51 billion tons of greenhouse gases annually with hemp technology and regenerative farming will also be the focus of [a COP26 “fringe festival”](#) called “Beyond the Green,” to be held in Glasgow, Scotland, in November along with COP26, the 2021 UN Climate Change Conference.

A 2018 article summarizing research from the University of Connecticut concluded that hemp farming could “set a great example of [a self-sustainable mini ‘ecosystem’ with minimal environmental footprint.](#)” [Henry Ford’s vision was](#) to decentralize industry, with “small [factory] plants ... on every stream,” a rural renaissance fueled not with oil but with alcohol. Hemp fuel and other forms of bioethanol are renewable energy sources that can be produced anywhere, contributing to energy independence not just for families but for local communities and even for the country. And it doesn’t place the burden of addressing climate change on the middle or working classes.

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