

Frankenstein fuels

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Monday 7th August 2006

Pioneered by bearded hippies running clapped-out vans on recycled chip fat, biofuels now mean big business, sold to us as a solution to global warming. We must not be fooled, argues **Mark Lynas**. Late every summer, large areas of central Borneo become invisible. There's no magic involved - most of the densely forested island simply gets covered with a pall of thick smoke. Huge areas of forest burn, while beneath the ground peat many metres thick smoulders on for months. These trees are burning in a good cause, however. They are burning to help save the world from global warming.

Here is how the logic goes. As the natural forest is cleared, land opens up for lucrative palm-oil plantations. Palm oil is a feedstock for biodiesel, the "carbon-neutral" fuel that the European Union is trying to encourage by converting its vehicle fleet. By reducing use of fossil fuels for its cars and trucks, the EU believes it can reduce its carbon emissions and thereby help mitigate global warming. Everyone is happy. (Except the orang-utan. It gets to go extinct.)

It's a con, of course. In 1997, the single worst year of Indonesian forest- and peat-burning, 2.67 billion tonnes of carbon dioxide were released by the fires, equivalent to 40 per cent of the year's entire emissions from burning fossil fuels. That was a particularly bad year: most summers, the emissions are only a billion or so tonnes, or about 15 per cent of total human emissions. The biggest Indonesian fires, in 1997 and 1998, took place on plantation company land, while in neighbouring Malaysia 87 per cent of recent deforestation has occurred to make way for palm-oil plantations. It is stretching credulity to argue that biofuels produced through this destructive process are helping combat climate change.

The EU is undaunted (though it has undertaken a public consultation), and persists with a target that 5.75 per cent of its vehicle fuels should be "renewable" by the year 2010. Not all of this will come from tropical sources such as palm oil - but nor can their importation be restricted on environmental grounds. The campaigning journalist George Monbiot has discovered that world trade rules would prevent the EU taking any measures to restrict imports of palm oil produced on deforested lands. Free trade comes first.

Some of this "deforestation diesel" will be processed and refined in the UK. A company called Biofuels Corporation has just finished building a biodiesel plant at Seal Sands, near Middlesbrough, and supplies fuel throughout the UK. With an annual production capacity of 284 million litres of biodiesel, it is strategically located next to a deep-water port to ease its access to imports of palm and other vegetable oils. A spokesman confirmed that imported palm oil from Malaysia is being used as feedstock, and that the source cannot at present be guaranteed as "rainforest-free". A second company, Greenergy Biofuels, is putting up a £13.5m plant at Immingham on Humberside, and plans another. Palm oil is again expected to be one of the main feedstocks imported.

As the promise of profits increases, the big players are beginning to get involved. The two largest external stakes in Greenergy Biofuels are held by Tesco and Cargill. Tesco will shift the product on its petrol forecourts, while Cargill - one of two giants that dominate the world food market - will supply the feedstock. Gone are the days when biofuels meant bearded hippies running their clapped-out vans on recycled chip fat.

Even the oil majors are sniffing around this new market. BP has teamed up with DuPont to develop a liquid fuel called biobutanol, derived from sugar cane or corn starch, which they aim to launch in the UK next year as an additive to petrol. In the meantime, the oil giant is ploughing half a billion dollars into biofuels research at a new academic laboratory called the Energy Biosciences Institute. Indeed, "biosciences" are what it's all about. Speak to anyone in the corporate energy or agricultural sectors and they will probably go dewy-eyed about the technological "convergence" of energy, food, genetics - in fact, just about everything. In the biotechnology industry the atmosphere is reminiscent of the heady days of genetic modification, before the companies realised that consumers didn't want to eat "Frankenstein foods". Frankenstein fuels, however, might prove an easier sell.

The GM industry now plans to reinvent itself, following the example of the nuclear industry, on the back of climate change. "Producing genetically modified crops for non-food purposes, as a renewable source of alternative fuels, may provide the basis for a more rational and balanced consideration of the technology and its potential benefits, away from the disproportionate hysteria which has so often accompanied the debate over GM foods," suggests the Agricultural Bio technology Council, an umbrella organisation for the biggest biotech companies. The Swiss corporation Syngenta is already marketing a variety of GM corn - one not approved for human consumption or animal feed - specifically intended for ethanol biofuels. It has just applied, with support from the UK, for an EU import licence - even though it admits it "cannot exclude" the possibility that some of this corn will find its way into the normal supply chain. The European biotech association EuropaBio is delighted with the EU's biofuels initiative. "Biotechnology will

help to meet Europe's carbon-dioxide emission reduction targets, reduce our dependence on oil imports and provide another useful income stream for our farmers," enthuses its secretary general, Johan Vanhemelrijck.

In the United States, biofuels are welcomed as a way to help wean the country off its dependence on oil produced by shady, Allah-obsessed Arabs. "Every gallon of renewable, domestically produced fuel we use is a gallon we don't have to get from other countries," beams Congressman Kenny Hulshof, a Republican sponsor of the Renewable Fuels and Energy Independence Promotion Act being considered by Congress. Not surprisingly, the American Soybean Association is also a supporter. "ASA is urging all soybean growers to contact their members of Congress and ask them to co-sponsor this legislation," says its president, Bob Metz, in a press release. "The toll-free number for the Congress operator is 1-888-355-3588."

In America, biofuels combine patriotism with economic self-interest in a seamless match. Farmers love it because biodiesel and ethanol are brewed from agricultural commodities, helping drive up farm-gate prices. Red-state senators love it because federal tax subsidies keep Republican-voting farmers happy. Even George W Bush loves it: "I like the idea of a policy that combines agriculture and modern science with the energy needs of the American people," the president told the Renewable Fuels Association in April.

Democrats and Republicans are united in touting ethanol. "All incumbents and challengers in Midwestern farm country are by definition ethanolics," the agricultural policy adviser Ken Cook told the *New York Times*. There are 40 ethanol plants under construction, and the US is poised to overtake Brazil (which uses sugar cane on a large scale to make the fuel) as the world's largest producer within a year. Cargill's CEO compares the transformation to "a gold rush".

But not everybody loves biofuels. David Pimentel, professor of insect ecology and agriculture at Cornell University, hates them. "There is just no energy benefit to using plant biomass for liquid fuel," he complains. Pimentel's own studies have concluded that making ethanol from corn uses 30 per cent more energy than the finished fuel produces, because fossil fuels are used at every stage in the production process, from cultivation (in fertilisers) to transportation. "Abusing our precious croplands to grow corn for an energy-inefficient process that yields low-grade automobile fuel amounts to unsustainable, subsidised food burning," he fumes.

Pimentel is not alone in thinking that burning food in cars while global harvests decline is not necessarily a good idea. China, with its enormous population, is already having second thoughts about going down the biofuels path. "Basically this country has such a large population that the top priority for land use is food crops," says Dr Sergio Trindade, an expert on biofuels. The same problem will doubtless hamper the biofuels revolution in Europe. According to one study, meeting the EU's 5.75 per cent target for its vehicles will require about a quarter of Europe's agricultural land. For the even more car-dependent US, it would take 1.8 billion acres of farmland - four times the country's total arable area - to produce enough soya biodiesel to cover annual petrol consumption.

So which gets priority: cars or people? A very simple answer to this land/fuel conundrum would be for people to use their cars less, and to cycle and walk more. But discouraging car use is not at the top of any politician's agenda, either in Europe or the US. Meanwhile, our leaders must be seen to be doing something about the rising greenhouse-gas emissions from road transport, so biofuels are the perfect technofix.

The dilemma might bring to mind Douglas Adams's *Hitchhiker's Guide to the Galaxy*, where the alien Ford Prefect took the name of a car because - looking down from above at all the busy roads and motorways - he had mistaken them for the dominant life form. If cars chug happily around between massed ranks of starving people in our biofuelled future, then perhaps Ford Prefect won't have got it so wrong after all.

For more about biofuels, log on to [<http://www.biofuelwatch.org.uk>]

The basics of biofuels

The term **biofuels** covers a wide range of products, some of which are already commercially available, some of which are still in the research and development stage.

A biofuel is made from **biomass** - organic material with stored chemical energy. Agricultural products specifically grown for use as biofuels include corn and soybeans, flaxseed and rapeseed, and hemp.

Biofuels are **renewable**, and can be stored indefinitely and safely, though their "feedstocks" can require

vast areas of land and their generation produces pollution.

The two main types of biofuel currently in use are **biodiesel**, made from new or used vegetable oils and animal fats, and **ethanol**, produced by fermenting grain, sugar cane, grass, straw and wood.

This article first appeared in the New Statesman.

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