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The end of oil as we know it?

As the oil age draws to a close, **Katy Brown, Rob Harrison and Dan Welch** perform the unenviable task of trying to find an ethical oil company

With cities, jobs and housing designed around the car for at least the last 50 years, the reality of a car-free lifestyle is still some way off for many people. But if *we* must use the internal combustion engine for some trips is there, in any meaningful *sense*, a better choice of fuel? And if our actions as ethical consumers are somewhat constrained, what other information might be useful to help us as citizens effectively rein in the power of Big Oil? This report is therefore designed to discuss new political ideas such as 'peak oil' and 'biofuels' as well as looking at decisions to be made at the petrol pump.

Perhaps the greatest change since our last review of the oil industry in 2003 (ECS 1) has been the explosion of direct political opposition to business-as-usual in the oil sector. In a year where the realities of climate change have taken centre stage in mainstream political debate, the wholly inadequate pace

of change in the oil sector has become more and more obvious. One of the best new groups, Oil Change International, produces an analysis of the 'real price of oil' under the following headings: global warming, blocking alternatives, local pollution, war and terror, peak oil, debt and poverty, human rights and consumer outrage. While we don't have space to consider them all here, we have produced a brief overview with links to further information at the end.

Investment in renewables

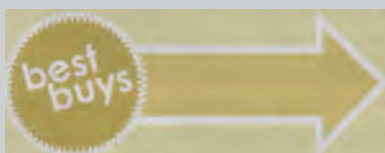
Friends of the Earth UK believes that, when comparing the oil majors, "the most important comparison to make on environmental issues is what proportion of each company's investments are being put into clear, green renewable energy rather than into finding yet more fossil fuel to burn".²⁵ Using Friends of the Earth data and other sources *we* have compiled the following table.

In the words of US environmental campaigners, the Sierra Club: "As in a charm contest between cigarette makers, there may not be a winner for Best Oil Company. If the inevitable trade-offs are too unsavoury, there's a simple solution—leave the car at home. When that's impossible, ...information can help you make an informed choice when you head for the gas pump."

For environmentally concerned consumers, boycotting Esso should remain the number one petrol buying priority.

If investment in renewables is the most important current comparative issue on which to rate oil companies, then BP should be the best buy. Though it should be made clear that BP only receives this accolade because its poor rating on this measure beats a very poor rating for all the other players. Sainsbury's is the only supermarket believed to currently supply only BP petrol.

Murco petrol stations, though few and far between, come out best on the table.



Oil company investment in renewables (includes biofuels)

| | COMPANY ANNUAL INVESTMENT IN RENEWABLES | REFERENCE | TOTAL ANNUAL INVESTMENT | REFERENCE | % OF TOTAL ANNUAL INVESTMENT |
|---------|---|-----------|-------------------------|-----------|------------------------------|
| BP | \$800m | 72 | \$14.0bn | 72 | 5.7% |
| Chevron | \$400m | 73 | \$14.0bn | 74 | 2.8% |
| Shell | \$200m | 72 | \$17.0bn | 72 | 1.1 % |
| Total | N/A (some) | 80 | \$13.5bn | 76 | N/A |
| Jet | N/A (some) | 78 | \$11.5bn | 77 | N/A |
| Murco | 0 | 79 | \$1.3bn | 79 | 0.0% |
| Exxon | 0 | 75 | \$18.0bn | 75 | 0.0% |

Although the table has been compiled without easily comparable data, the general trends are clear. Even the best performing companies are spending over fifteen times as much money on finding new oil as they are on developing renewables, with the majority spending nearer 100 times as much. The message is clear; moving to renewable energy is neither a serious or urgent priority for Big Oil. According to the Financial Times, more than £36 billion of new money was invested globally in clean or renewable energy or clean technology in 2006 (up 43% from 2005).²⁶ This puts into context the failure of imagination in the oil sector, whose combined contribution is barely 3.9% of this.

Political opposition

One element in the new wave of political opposition to Big Oil is the idea of a windfall tax on its huge recent profits (2005: Exxon \$36bn, Shell \$22bn, BP \$19bn, Chevron \$14bn). The state could then invest this money, with a more appropriate sense of urgency, in renewables. The New Economics Foundation's 2006 report 'Hooked on Oil'

proposed just that - a tax to "establish an Oil Legacy Fund to pay for Britain's urgent transition to a sustainable, decentralised energy system"²⁷

Although a similar windfall tax has also been discussed in the US Senate, the big new discussion point in the USA has become the ending of 'oil subsidies' and spending the saved money on renewables. Estimates of US subsidies, tax-breaks and unenforced payments for Big Oil reach as high as \$39bn annually,³² and it is clear that the Democrats see mileage in directing this towards renewables.³³

Other key elements of the new political opposition include a campaign to get oil money out of US politics,³⁴ and campaigns to stop investment in oil projects in the Third World (see overleaf).

Boycotts and consumer action

Five of the seven companies supplying petrol in the UK are subject to boycott calls:

- BP: donations to the Republican Party in the USA (boycottbush.net)

- Exxon: the 'number one climate criminal' (greenpeace.org.uk)
- Shell: land rights issues in Ireland (www.corribsos.com)
- Total: involvement in Burma (www.totalitarian-oil.blogspot.com/)
- Chevron: involvement in Burma and Republican party donations (see above)

In our last review of petrol the Stop Esso campaign was the most significant development for consumer action in the sector. Three years later and campaigners argue that "Esso still stands out from the rest" as it still doesn't accept the science of climate change, doesn't invest a single dollar in renewable energy and does spend millions on "lobbying and propaganda to stop the world tackling the problem."³⁹ The boycott, though quieter, is still active and well resourced on both sides of the Atlantic." Exxon is being forced into defensive strategies, and for environmentally concerned consumers, boycotting Esso should remain the number one petrol buying priority.

For those of us involved in the 17 year boycott campaign against the backers of apartheid South Africa, it is clear that profound change against entrenched forces takes time. Five years is just the beginning.

Also of significance for consumers of petrol are the activities of the Sierra Club, the USA's largest environmental organisation. Since 2001 they have produced an Ethical Consumer-style buyers' guide for petrol.

"In a perfect world, we'd all commute on electric buses and do our errands by bicycle or on foot. Meanwhile, however, many of us have no choice but to drive, so

| | Environment | Animals | People | Politics | +ve |
|-------------------------|-------------|---------|--------|----------|-----|
| Ethiscore (out of 20) | | | | | |
| Environmental Reporting | | | | | |
| Nuclear Power | | | | | |
| Climate Change | | | | | |
| Pollution & Toxics | | | | | |
| Habitats & Resources | | | | | |
| Animal Testing | | | | | |
| Factory Farming | | | | | |
| Other Animal Rights | | | | | |
| Human Rights | | | | | |
| Workers' Rights | | | | | |
| Supply Chain Policy | | | | | |
| Irresponsible Marketing | | | | | |
| Armaments | | | | | |
| Genetic Engineering | | | | | |
| Boycott Call | | | | | |
| Political Activity | | | | | |
| Anti-Social Finance | | | | | |
| Company Ethos | | | | | |
| Product Sustainability | | | | | |

| | | | | | | | | | | | |
|--------|-----|--|--|--|--|--|--|--|--|--|------------------------|
| Murco | 9.5 | | | | | | | | | | Murphy Oil Corporation |
| Jet | 6.5 | | | | | | | | | | ConocoPhillips |
| Elf | 4 | | | | | | | | | | Total SA |
| Shell | 4 | | | | | | | | | | Royal Dutch Shell plc |
| Total | 4 | | | | | | | | | | Total SA |
| BP | 3.5 | | | | | | | | | | BP plc |
| Texaco | 2.5 | | | | | | | | | | Chevron Corporation |
| Esso | 2 | | | | | | | | | | ExxonMobil Corporation |
| Mobil | 2 | | | | | | | | | | ExxonMobil Corporation |

KEY bottom rating middle rating top rating (no criticisms found)

Product Sustainability: companies can receive a maximum of five positive marks for this category. Ethiscore: the higher the score, the better the company across the criticism categories (see www.ethicalconsumer.org/magazine/buyers/categories.htm or "Introduction to Ethical Consumer" booklet for more details).

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we face the same dilemma: Where should an environmentalist gas up?⁹² Their current rating is as follows:

Top of the Barrel

BP
Sunoco (US only)

Middle of the Barrel

Shell
Chevron
Valero Energy Corporation (US only)
Citgo (US only)

Bottom of the Barrel

ExxonMobil
Conoco Phillips

Supermarkets

In the UK, the big four supermarkets, Tesco, Sainsbury's, Morrisons and ASDA, are also significant petrol retailers. Unfortunately for ethical consumers they do not really offer an ethical option – except possibly Sainsbury's.

Since the supermarkets themselves are not involved in drilling for oil or refining, they must buy it from other companies – most likely one of the oil majors reviewed in this report. Unless they have a long-term supply arrangement which they disclose to consumers, we cannot know if we are inadvertently supporting Esso by using a supermarket's pumps. Sainsbury's may be an exception as in 2004 it struck a deal with BP and it is believed they now supply all of Sainsbury's fuel.^F

Some supermarkets have been innovating fuel supply to some degree, with Tesco promoting biodiesel and Tesco and Morrisons trialling bioethanol mixes. For problems with biofuels, see overleaf.

Poverty, human rights and local pollution

"In the mid 1990s economists Jeffrey Sachs and Andrew Warner noticed a funny thing. One would think that countries that were well endowed with oil gas and mineral wealth would be correspondingly economically well off – but in fact just the reverse seemed to be true. Sachs and Warner found a strong negative correlation between a country's dependence on mineral exports (particularly oil) and their Gross Domestic Product. Further research by others also has found that these countries also suffer from high rates of poverty, malnutrition, child illiteracy, corruption, authoritarianism, civil war, and even indebtedness. Collectively, these observations are known as the Resource Curse.

Much of this is credibly attributable to the corrupting influence of large amounts of money on unaccountable individuals and institutions. But much of it also appears to be systemic."

Oil Change International 2007.'

Coupled with this we have a large amount of direct evidence of human rights abuses and pollution by oil companies. For example, Chevron is currently being sued by five indigenous groups which filed a class-action lawsuit against the company in 2003 for environmental damage caused by Texaco which Chevron took over in 2002. Between 1964 and 1992 Texaco dumped over 18.5 billion gallons of toxic 'produced water' into open unlined pits and directly into the swamps, streams and rivers that constitute the rainforest of north-eastern Ecuador. Environmental experts consider it the worst case of oil pollution on earth and the second biggest environmental catastrophe in human history after Chernobyl. Leukaemia amongst children is four times the national average, birth defects and miscarriage rates are high and drinking and bathing water is contaminated with carcinogens for thousands of miles.⁴⁸

In November 2005 a Nigerian court ordered Shell to stop flaring gas in Iwherekan Community in the Niger Delta. The judgement found that gas flaring, which damages health and property, is a gross human rights violation and that Nigerian laws allowing the practice are unconstitutional. Shell has yet to comply with



A Shell gas flare in the Niger Delta

this law, and rather than respond to concerns it applied for a stay of execution and launched an appeal opposing the finding that gas flaring is a human rights violation.

There are two main campaigns designed to address these kind of global justice issues. The first, primarily US-based, seeks to 'End Oil Aid' and campaigns against World Bank/IMF and private bank funding of all oil projects in the Third World. Using advocacy and detailed evidence they demonstrate the systematically poor consequences of oil development projects.¹⁰⁰

The second type of campaign, primarily European, is to lobby for transparency of oil revenues. Save The Children has ranked oil companies in terms of revenue transparency¹⁰¹ Revenue payments from the oil industry have the potential to bring about dramatic improvements in citizens' lives. If spent on public investments in health and education they can help lift poor children out of poverty. In reality huge revenues from extractive industries have frequently fuelled corruption, exacerbated conflict and weakened economic development resulting in damaging impacts on children's lives.

Transparency, they say, is a prerequisite to accountability which is strongly linked to effective revenue use and it is in this interest that they have conducted this research.

With the exception of Murphy Oil, all the companies in this report were included. Best to worst their ratings were:

- Shell (3rd overall out of 24 with 28.9%)
- Chevron (4th, 28.7%)
- BP (6th, 27.1%)
- ExxonMobil (8th, 23.8%)
- ConocoPhillips (14th, 19.1%)
- Total (21st, 9.5%)



Company Profiles

BP was named one of the ten worst corporations of 2005 by Multinational Monitor as a result of the fatal explosion at its Texas refinery which killed 15 workers and injured 180. It inherited problems at the plant from Amoco which it purchased in 1998, but rather than invest to improve safety BP ordered a 25% cut in fixed costs." It also came under criticism over the rupture and consequent oil spill from a pipeline, largely its responsibility, in Alaska, which poured thousands of litres of crude oil into the Arctic Ocean.¹⁸

BP has been criticised for pushing ahead with the Baku-Tbilisi-Ceyhan oil pipeline which runs from Azerbaijan through Georgia to the Turkish Mediterranean and cuts through the Borjomi national park in Georgia, an area of difficult terrain where landslips are common. The pipeline also follows a highly active earthquake fault line in northern Turkey, creating a major risk of pipeline spills. Campaigners say there has been an increase in human rights abuses relating to the building of the pipeline and inadequate support and compensation given to villagers affected.²¹ The company funded research at Huntingdon Life Sciences which involved feeding constituents of PVC to 7,000 rats to see if reproduction or offspring were affected.²³

Chevron has been criticised for gas flaring in Nigeria,²⁸ and was last year fighting a lawsuit filed by Nigerian villagers alleging that a subsidiary had supported military attacks on protesters in the Niger Delta.²⁹ In 2005 PETA submitted shareholder resolutions asking that Chevron replace five of the most common animal tests in its operations with cruelty-free substitutes.³⁰ A Chevron subsidiary in Angola allegedly refused to recognise the SAECGOC trade union, representing 1,000 workers.³¹

ConocoPhillips was ranked third top US corporate air polluter in 2006.³⁵ Its Humber refinery topped the UK emissions table for benzene.³⁶ Conoco was one of a number of mining companies lobbying the Indonesian government to open up protected land for mining which campaigners argue would remove local communities from their land and restrict their access to forest resources, cause health problems from increased pollution and increase violence and other social problems. The area was also one of high biodiversity and fragile ecosystems, home to large numbers of endangered species.³⁸ It was also accused of discrimination for failing to employ Timorese workers in its oil operations in the Timor Sea³⁹ and has operations in tax havens.⁴⁰

ExxonMobil was also involved in the ruptured Alaskan pipeline.³⁷ Mobil was one of several companies which accepted liability for spilled oil containing volatile toxins, which had permeated land underlying a working class

community in New York. Cancer levels were elevated and residents were taking the companies to court for damages to health and to force a faster clean-up."

Due to an argument between Esso and her keeper, Tessa the 'Esso tiger' ended her life under a spotlight in a bare concrete enclosure in a shopping mall in the Caribbean.⁴³ An Esso subcontractor involved in the Chad-Cameroon oil pipeline illegally obliged 4000 workers to work overtime and then wouldn't pay them for it. The subcontractor was ordered to pay the workers but refused. When the employees held a sit-in to pressure their employer to honour the ruling, the Governor of the area ordered units from the national 'Gendarmes' to break it up, resulting in three deaths, three seriously injured, and thirty arrests.⁴⁴ According to a report by Amnesty International, companies involved in the pipeline, led by ExxonMobil, were 'secretly contracting out of human rights' by making agreements which they sought to disguise under the veil of 'commercial confidentiality', including financial disincentives for the countries involved to protect human rights. Confiscation of land from poor farmers with no compensation had already occurred.⁴⁵

As a direct result of **Murphy Oil** failing to follow its own emergency preparedness procedures, when Hurricane Katrina hit one of the affected communities was covered in a million gallon oil spill. Many residents were persuaded without full informed consent into signing "inconvenience settlements," stating that they held **Murphy Oil** blameless for any health problems that any household member might experience in the future in exchange for a one-time payment of **\$15-20 thousand**.⁴⁹ Residents were hoping to bring a class action lawsuit against the company.

The company has operations in three oppressive regimes,⁵⁰ has lobbied against positive action on climate change⁵¹ and has subsidiaries in tax havens.⁵²

Royal Dutch Shell has been criticised for spearheading the Sakhalin II project, now under the control of Russian gas giant Gazprom, for its potential impact on both the local population and the marine environment, including the world's last 100 Western Pacific grey whales.⁵³ Shell also funded PVC experiments on rats at Huntingdon Life Sciences²³ and its aviation wing has been engaged in developing military aircraft fuel.⁵⁷ The Shell Foundation,

a charity that according to Shell is independent of the company, was rebuked by the Charity Commission last year when documents obtained by the Guardian newspaper showed that the director of the charity and Shell UK's chairman discussed the £11 billion Sakhalin scheme at a private meeting with the Secretary of State for International Development.⁵⁸

Total SA is another culprit of gas flaring in Nigeria.⁶³ Its subsidiary, Cerexagri, was one of the fifteen largest manufacturers of generic pesticide active ingredients in the world.⁶⁴ Total was the fifth highest emitter in the UK of VOCs, pollution said to cause high levels of ground-level ozone, implicated in lung damage. Its Lindsey refinery was the third largest emitter of benzene in the UK³⁶ and was fined £14,000 in 2006 after an explosion left two workers injured.⁶⁵ The company is a partner in a gas pipeline which earns the Burmese military junta between \$200 and \$450 million a year, making it the regime's biggest single source of revenue.⁶⁶

One subsidiary, Nuk, has been criticised for irresponsible marketing of baby milk products" while another, Hutchinson, made brake and vehicle transmission systems for the defence market.⁶⁹ Congo-Brazzaville was left with international debts of £3.4 billion as a result of the involvement of Elf Aquitaine (now Total) in the country's oil economy which was said to have been characterised by 'influence peddling, bribery and obscure offshore deals.'⁷⁰ French investigators launched an enquiry last year into allegations of bribery by two Total senior officials relating to the oil-for-food programme which had operated in Iraq.⁷¹



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"Governments are in denial about the scale of what is needed to be done. We are moving into a new world without maps."

Chris Skrebowski (editor of Petroleum Review)

The era of cheap oil is over. That's according to David O'Reilly, CEO of ChevronTexaco. The idea of peak oil is not that oil is running out, but that the world will reach a peak of maximum production. After the peak, regardless of market price, improved technologies or further discoveries, production will decline. Region after oil-producing region has shown the same bell shaped curve - a peak of discoveries, a peak of production and then remorseless decline. In the US, where discoveries grew until the late 1930s, oil production grew steadily until 1970 and has fallen ever since. Similarly North Sea production is declining at an increasing rate,

having peaked in 1999. World discovery of oil peaked in the 1960s, and has declined since then. Last February the Kuwait Oil Company stunned the industry by revealing that the Burgan field, the second largest in the world, had reached peak output far earlier than previously forecast.¹⁹ Dr Mamdouh Salameh, an oil consultant to the World Bank, estimates that there is a 300-billion-barrel exaggeration in OPEC's reserves.²⁰ A growing number of specialists have concluded that the world is at or near peak production and demand will soon outstrip supply.

But with fossil fuel driven climate change threatening the planet shouldn't we welcome the decline of the oil era? Be careful what you wish for. A study conducted for the U.S. Department of Energy concluded that, if the world does not start a massive program to wean itself off oil addiction twenty years before peak, the world will face a devastating economic depression. According to the report's author, Robert Hirsch, the program required is analogous to "the mobilisation for World War II: Hirsch estimates the world needs to spend \$1 trillion a year on alternative fuels, for 20 years. And we are 10 to 15 years behind schedule.²²

In a speech to the London Institute of Petroleum in 1999, Dick Cheney noted that global oil demand was set to grow by 2% annually while existing reserves were set to decline by 3% annually. He went on: "That means by 2010 we will need an additional fifty million barrels a day. So where is the oil going to come from?"

Subsequent events demonstrate one response to peak oil - war. The coming century could be dominated by the great powers struggling for control of the world's dwindling hydrocarbon resources.

Another response is the development of "unconventional oil resources," such as the Canadian tar sands, and technology that converts coal to oil. Both have devastating consequences for the climate. A new campaign trying to prevent funding for eleven new coal-fired generating plants in the USA is discussed in the Money pages in this issue.

A third response to peak oil is the strategy of "power down" - a commitment to international co-operation, a reduction of resource use in wealthy countries, localisation, and a massive programme to develop renewable energy²⁴

Biofuels - green gold or red herring?

A recent UK study suggested that using biodiesel instead of petroleum diesel could yield savings of the greenhouse gas carbon dioxide (CO₂) in the region of 70%.²⁵ So why has environmental campaigner George Monbiot called biofuels "the most destructive crop on earth"?

In the US, with federal subsidies to agribusiness for bioethanol production, and in the EU with targets to be met, biofuels are big business. Bioethanol, used as a substitute for petrol, is usually made from sugarbeet or corn, while biodiesel is produced from plant oils (in



Steam and carbon dioxide discharge from a typical corn-to-bioethanol manufacturing plant.

the UK usually rapeseed). Most cars can burn petrol blended with up to 10% bioethanol without any modifications to the engine. Rudolf Diesel designed his original engine to run on peanut oil, while today's diesels can run on 100% biodiesel and, with conversion, on untreated vegetable oil. Biodiesel represents around 80% of EU biofuel use.

In the 2006 budget the UK Government introduced the Renewable Transport Fuels Obligation (RTFO) - a requirement on transport fuel suppliers to ensure that, by 2010, 5% of all road vehicle fuel is supplied from "renewable sources" (ie. biofuels). These will be blended with ordinary petrol and diesel (see below). The EU also plans to increase biofuel contribution to 10% of transport fuel by 2020.² The hope is that biofuels offer the potential of cutting greenhouse gas emissions quickly with minimal modification to existing vehicles and fuel infrastructure. The UK Government hopes the RTFO will cut transport sector CO₂ emissions by between 2% and 3%. However, there is a huge debate over whether biofuels actually do cut greenhouse gas emissions. Some studies show that more fossil fuel is used in the growing and production of biofuel than the biofuel replaces.¹

According to the European Environment Agency, to achieve the 10% target would require using up to a quarter of European cropland.¹ In reality, the target is likely to be met with massive imports. That might sound benign compared to drilling more oil wells – but the reality is far from it.

Sugar in the tank

In the UK and Europe unleaded petrol can include up to 5% bioethanol. Sugar grown to produce ethanol is exempted from EU production quotas, and British Sugar supplies most of the feedstock for UK bioethanol. Much is blended with petrol retailed in supermarket forecourts. Tesco has a 25% stake in Greenergy Fuels Ltd, which commands half the UK biofuel market.¹ British Sugar last year announced a collaboration with BP and DuPont to produce biobutanol, a biofuel with an energy content closer to that of petrol than ethanol.¹

Fuels with a higher ethanol content, such as E85 (85% bioethanol and 15% petrol) sold at a number of Morrisons sites, can only be used in "flexi-fuel" vehicles, such as the Saab 9-5 Biopower or the Ford Focus Ffv. Flexi-fuel vehicles claim to offer CO₂ reductions of between 50-70% when running on E85.⁸ The fuel is produced by Harvest Energy, a subsidiary of Blue Ocean Associates plc, a UK-based oil trading group. These reduction figures are for exhaust pipe emissions and do not include CO₂ emissions produced in the making of the fuel.

Flexi-fuel vehicles also run on ordinary unleaded, which in the case of the Ford Focus Ffv, produces emissions of 169g carbon a kilometre, well outside the voluntary EU target of 140g/km.⁹ In the US, Volvo is launching the first flexi-fuel SUV the XC60.

Feeding SUVs, not people

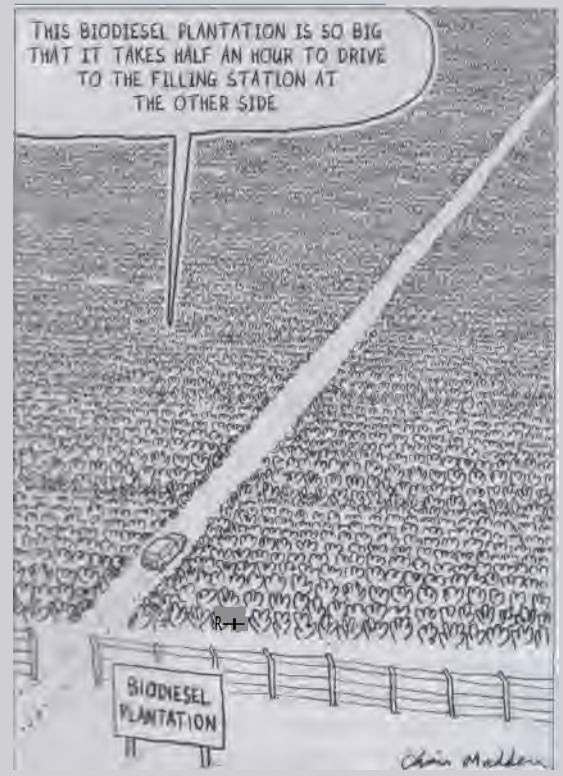
The corn required to fill an SUV tank with bioethanol just once could feed one person for an entire year.¹⁰ Lester Brown has described the boom in bioethanol as a competition between the 800 million people in the world who own cars and the 3 billion people who struggle to feed themselves on less than \$: a day. In what has been described as "a modern day gold rush," 30% of the US corn crop will be allocated to ethanol production this year. Corn prices have risen more than 85% since the end of last year, causing an across-the-board increase in food prices.¹¹

Some experts in the US argue that at the current pace of development, ethanol production could strain food supplies, force the use of marginal farmland set aside for conservation and deplete groundwater aquifers. Despite these many problems it is not at all clear whether using ethanol will even reduce CO₂ emissions. Fossil fuels are used at every stage of the process, from growing corn with petroleum-based fertilizers, herbicides and pesticides to oil to run tractors, fuel for the distillation process to turn corn into ethanol and fuel for transporting the ethanol to blending facilities by truck.

The largest U.S. producer of ethanol, agribusiness giant Archer Daniels Midland (ADM), has been ranked as the tenth worst corporate air polluter in the US. It has been charged with violations of the Clean Air Act at 52 plants in 16 states. The company, which cleared \$1 billion in profits last year, operates coal-fired plants to process ethanol – and its Iowa ethanol plant has been ranked the 26th largest emitter of carcinogenic compounds in the U.S.¹² ADM also has a leading position in the European market for oil seed-derived biodiesel.

Biodiesel - the most destructive crop on earth?

Palm oil produces significantly better yields than other crops and so is a favoured source of biodiesel. It is grown mainly in South East Asia, where ancient rainforest is commonly



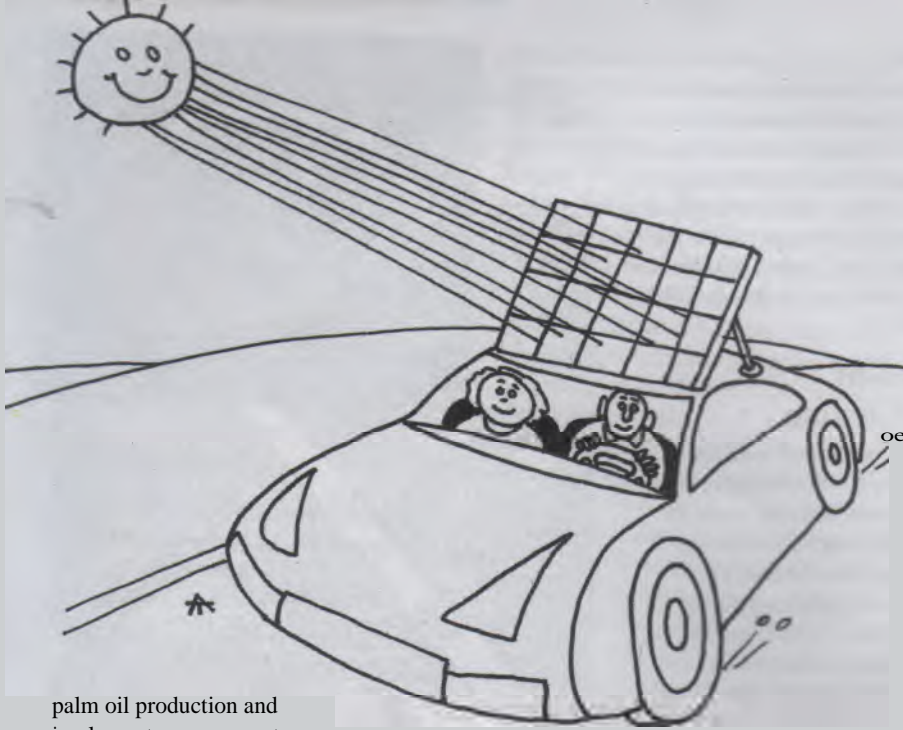
cleared and peat bogs drained to make way for plantations, both processes leading to the release of huge amounts of carbon dioxide. Indonesia has already established some six million hectares of oil palm plantations and plans a further 20 million. A recent Friends of the Earth report found that between 1985 and 2000, oil-palm plantations were responsible for an estimated 87% of deforestation in Malaysia. As a result, 90% of the orang-utan's habitat has been destroyed, threatening extinction within twelve years.¹

Indonesian NGO Sawit Watch have also exposed the serious injustices caused to local communities by the way oil palm plantations have been developed. They claim that the interests of estate companies (often backed by foreign investment) are prioritised over the rights of the tens of millions of Indonesians blighted by the sector. They also argue that the Indonesian government fails to recognise the land rights of indigenous people who are forcibly displaced by the industry, whilst the estimated four million smallholders on estates in Indonesia are subjected to poverty and debt¹

Dr Samantha Lacey, a Responsible Shareholding Analyst with Co-operative Insurance, has recently returned from a fact-finding mission with Sawit Watch in Kalimantan (Indonesian Borneo). According to Dr Lacey there is a risk of serious social conflict if the palm oil industry does not recognise the rights of the indigenous people.

The Roundtable for Sustainable Palm Oil (RSPO) was established to develop a globally acceptable definition of sustainable

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palm oil production and implement management practices that comply with this definition. Currently most of the 95 million tonne per year crop ends up in foodstuffs and cosmetics. Biodiesel is creating a whole new market.

Friends of the Earth and Co-operative Insurance have had tremendous success in getting UK supermarkets and food companies to join the RSPO. Dr Lacey notes that getting oil majors such as BP sitting at the same table as Oxfam and WWF is "really positive." However she stresses: "Biofuels may be one part of a strategy to tackle climate change but only if the environmental and social concerns are addressed first. This means developing robust social and environmental certification processes is a top priority and, in particular, not using palm oil."

Sustainable Biofuel

Not all biofuels are unsustainable. Drivers looking for a truly green alternative could seek out small-scale producers using sustainable feedstocks, or get involved in a "supply club" to produce their own (see Links section). Using used cooking oil, a resource that would otherwise be waste, allows a far greater reduction in CO₂ emissions than virgin oil.

A biodiesel industry insider warned that quality control in the retail market can be problematic. Whilst the voluntary specification for biodiesel (EN 14214) is too expensive for most suppliers to consider, minimum emission standards often go un-enforced. And with the payment of fuel duty the responsibility of the producer, there is an incentive for black market operators.

Ready-made biodiesel kits to make your own fuel are available for around £1,000 for a 40 litre a day processor, which the manufacturers claim can produce the fuel for about 60 pence per litre including fuel duty.¹³

Although individuals can radically reduce their carbon footprints by using sustainable biofuels, it is a sobering thought that the estimated 100,000 tonnes a year of waste cooking oil that the UK produces "is enough to meet only one 380th of our demand for road transport fuel.¹⁰ To keep the UK's 20 million or so cars on the road using home grown biodiesel would require five times the total area of all farmland currently under cultivation."

Alternative Fuels

Liquid Petroleum Gas (LPG) and Natural Gas vehicles

With around 1200 LPG filling stations in the UK and petrol engine conversions easy to come by, LPG is the commonest alternative fuel in the UK. LPG, a blend of propane and butane, gives a 10-15% CO₂ reduction (well to wheel) in comparison with petrol - or similar CO₂ emissions to diesel. Further environmental benefits are 80% lower NO_x emissions than diesel, as well as zero particulate emissions. Conversions generally cost around £1,200-£2,700 and the Energy Saving Trust has a register of approved fitters as well as a refuelling map (see Links section). LPG vehicles cost approximately 30% less to run than their petrol equivalents.

Far less common in the UK are vehicles using Compressed Natural Gas and Liquefied Natural Gas. Due to the weight and cost of on-board gas tanks, conversions have been mainly limited to larger vehicles, however Volvo now offers three dual fuel gas/diesel models. Natural Gas offers similar environmental benefits to LPG.

Electric Vehicles

In the most recent Ethical Consumer report on cars (issue 95) the Reva G-Wizz, an electric car, was the best buy in environmental terms - when powered from renewable electricity. Since then the NICE MEGA City and the Sakura Maranello⁴ have joined the market. These vehicles, which comfortably seat two, cost in the £8,000-£10,000 range. Currently the major limitation lies in their short range, usually around 30 to 60 miles. For more on electric vehicles see the Links section.

Hybrids

Hybrid vehicles are powered by a combination of petrol or diesel and electricity (most charge their batteries when braking), improving fuel efficiency and reducing emissions. However, according to Department of Transport figures the best four diesels for CO₂ emissions (less than 120g/km CO₂) perform as well as, or better than, the Toyota Prius on fuel consumption.¹⁶ Toyota, Honda and Citroen produce hybrid models, which are between £1,000-£3,000 more expensive than conventional vehicles.

Technology to the rescue?

"Second generation" biofuels, according to WWF, have the potential to reduce greenhouse gas emissions and stimulate more sustainable land use. These fuels, currently under development, use non-food crop feedstocks.

Unfortunately, it looks as if alternative fuel technologies cannot provide the immediate cuts in greenhouse gas emissions needed if we are to tackle climate change effectively - we simply cannot afford to wait in hope for a technological fix. Ultimately, it is not just the fuel that needs to change; it is the lifestyle that makes use of it.



Links

Political Action

Friends of the Earth

26-28 Underwood Street, London N1 7JQ
020 7490 1555 www.foe.co.uk

Greenpeace

Canonbury Villas, London N1 2PN
020 7865 8100 info@uk.greenpeace.org
www.greenpeace.org.uk

Save The Children

Supporter Care, Save the Children, 1 St. John's Lane, London EC1M 4AR 020 7012 6400
supporter.care@savethechildren.org.uk
www.savethechildren.org.uk

Oil Change International

2228 12th Pl. NW, Washington DC 20009 USA
+1 202 518 9029 info@priceofoil.org
www.priceofoil.org

Peak Oil

The **Oil Depletion Protocol** (Richard Heinberg 2006) is a proposal for an international agreement for the cooperative reduction of oil dependency.
www.oildepletionprotocol.org

The **Foundation for the Economics of Sustainability** explores how we can think about climate change and peak oil as interconnected challenges.
www.feasta.org

Rob Hopkins is a permaculture practitioner developing local "power down" strategies in Totnes.
www.transitionculture.org

Association for the Study of Peak Oil and Gas

www.peakoil.net

The 'Hirsch Report'

www.netl.doe.gov/publications/others/pdf/Oil_Peaking_NETL.pdf

Biodiesel and biofuels

A list of biodiesel outlets in the UK can be found at www.purebiodiesel.co.uk (which also provides biodiesel deliveries).

Further information is available from the Centre for Alternative Technology and the Low Impact Living Initiative (LILI); both run courses on your own biodiesel. And LILI also runs courses on vegetable oil engine conversions

Centre for Alternative Technology
www.cat.org.uk 01654 705950

Low Impact Living Initiative

www.lowimpact.org
01296 714184

Bio-power (UK) Ltd

is a not-for-profit company that acts as the hub for a network of agents supplying a range of sustainable biofuels (not biodiesel)
www.bio-power.co.uk

A discussion forum on biofuels can be found at www.vegetableoildiesel.co.uk

Biodiesel Books

From the Fryer to the Fuel Tank: The Complete Guide to Using Vegetable Oil as an Alternative Fuel

Joshua Tickell, Eco-Logic Books / Worldly Goods, ISBN 0970722702

How to Make Biodiesel

Dave Derby, Jon Halle, Low-Impact Living Initiative, ISBN 0954917103

LPG

For approved fitters and refuelling map contact the Energy Saving Trust
www.est.org.uk 0845 602 1425

or the LPG Gas Association

www.lpga.co.uk



Electric vehicles

Energy Saving Trust

www.est.org.uk/vehicles/
Lowcarbonvehicles

Green Car Congress for Sustainable Mobility
www.greencarcongress.com

Electric Vehicle UK Magazine

www.evuk.co.uk

Palm oil

"The Oil for Ape Scandal: how palm oil is threatening orang-utan survival"
www.foe.co.uk/resource/reports/oil_for_ape_full.pdf

Sawit Watch/Forest Peoples Programme

reports on Indonesia and palm oil available from www.forestpeoples.org
Sawit Watch: +62 251-352171

Forest Peoples Programme: 01608 652893

Roundtable on Sustainable Palm Oil

www.rspo.org secretariat +603-6411 8803

References 1 "Evaluation of the comparative energy, environmental and socio-economic costs and benefits of bio-diesel" School of Environment and Development, Sheffield Hallam University (Draft Report for DEFRA) 2 EU Strategic Energy Review 2007 3 Pimentel D and Patzek TW. Natural Resources Research 2005, 14, 65-76 4 www.euractiv.com/en/transport/biofuels-transport/article-152282 viewed 15/1/07 5 www.foe.co.uk/resource/reports/oil_for_ape_full.pdf viewed 15/1/07 6 www.forestpeoples.org/documents/prv_sector/oil_palm/oil_palm_press_rel_indonesia_nov06_eng.shtml viewed 15/1/07 7 www.britishtbioethanol.co.uk viewed 15/1/07 8 www.morrisons.co.uk/1424.asp viewed 15/1/07 9 Wilkins D. The Independent 13/6/06 10 Monbiot G. The Guardian 6/12/05 11 www.ft.com/cros/s/15b15e60-a4d5-11db-boef-0000779e2340.html viewed 22/01/07 12 www.corpwatch.org/article.php?id=13646 viewed 9/1/07 13 www.biofuelsolutions.co.uk 14 www.biodiesel.co.uk 15 Mobbs P. "Energy Beyond Oil" 2005 p.116 16 www.vcacarfueldata.org.uk 17 Multinational Monitor: 10 worst corporations of 2005, 25 April 2006 18 Independent, The: Oil gushes into arctic ocean, 29 March 2006 19 www.kuwaittimes.net/localnews.asp?dismode=article&artid=37595069 20 Quoted in Leggett, J. Half Gone, Portabello Books, 2005 21 Kurdish Human Rights Project: BP's new pipeline launched amidst protests 22 Gulf Times 20/9/6 23 Animal Aid Website www.animalaid.org.uk: Animal Aid website www.animalaid.org.uk/campaign/vivi/aamsa02.htm, 1 December 2002 24 see Heinberg, R. "PowerDown: options and actions for a post carbon world" Clairview 2004 25 Friends of the Earth Press Release July 27th 2006 26 Financial Times: 3/1/07 Renewable energy begins to pick up speed as in investment 27 New Economics Foundation Press Release 23/10/06 28 Climate Justice Programme press release: Oil companies ordered to stop gas flaring in Nigeria, 14 November 2005 29 Business Week Online: Chevron fights rights abuse allegations, 1 January 2006 30 Animal Times: Fall 2005, vol 20 no 3 31 Focus on Labour: 14 December 2006 32 <http://priceofoil.org/clean-energy> viewed 23/1/07 33 26/12/06 Democrats seek to use oil cash for renewables -Associated Press 34 www.priceofoil.org/landstate viewed 23/1/07 35 www.peri.umass.edu: Top corporate air polluters named, 11 May 2006 36 ENDS Report: 381, October 2006 37 Earth Island Journal: Summer 2006 38 Friends of the Earth International/Link: 2nd quarter 2002, 1 April 2002 39 <http://www.greenpeace.org.uk/climate/climatecriminals/esso/> viewed 21/1/07 40 ConocoPhillips website, www.conoco.com: 5 January 2007 41 www.exposeexxon.com viewed 17/01/07 42 <http://www.sierraclub.org/sierra/pickyourpoison/> viewed 21/1/07 43 Animals International: Winter/Spring 2005 44 ICFTU <http://icftu.org>: Chad: serious violence against oil workers, 28 September 2005 45 Amnesty International Website: Chad-Cameroon pipeline: new report accuses oil companies and governments of secretly contracting out of human rights 46 www.petroprices.com/sainsburys.html viewed 17/1/07 47 <http://priceofoil.org/thepriceofoil/debt-poverty> viewed 23/1/07 48 www.carbonweb.org viewed 12/1/07 49 www.aaanet.org viewed 15/01/07 50 Murphy Oil Corporation Corporate Communications: www.murphyoilcorp.com, 13 December 2004 51 The Bill That Industry Bought: 1 August 2002 52 Who Owns Whom: 1 August 2002 53 www.bankwatch.org viewed 23/01/07 54 <http://understory.ran.org/2006/11/14/end-oil-aid-now/> 55 <http://www.priceofoil.org/endoilaid/> 56 Beyond the Rhetoric, measuring revenue transparency: company performance in the oil and gas industries. Save The Children 2005 57 Shell website, www.shell.com: 17 January 2003 58 Guardian, The: 17 October 2006 63 www.totalitarian-oil.blogspot.com: 10 January 2007 64 Multinational Monitor: Vol 26 no 11&12 65 Hazards: 94, April-June 2006 66 The Ecologist: April 2005 68 Breaking the Rules: 2004 69 Total SA Corporate Communications: www.total.com, 10 December 2004 70 Corporate Watch newsletter: issue 24, June/July 2005 71 BBC News Website www.bbc.co.uk: Total executive in bribery probe, 20 October 2006 72 Friends of the Earth Press Release July 27th 2006 Who is performing worst on climate change? 73 http://money.cnn.com/2006/08/22/news/companies/exxon_renewables/ Exxon: Oil, Gas and that's it. August 22nd 2006 74 Chevron Annual Report 2005 75 Exxon Summary Annual Report 2005 76 Total SA The 2005 Results & Outlook Presentation 77 ConocoPhillips Annual Report 2005 78 www.conocophillips.com/newsroom/news_releases/2006+News+Releases/121906.htm 79 Murphy Oil Corporation Annual Report 2005 80 www.total.com