

APRIL 2008  
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ISSUES • ACTIONS • IDEAS • SINCE 1970

# ECOLOGIST

APRIL

The world's  
cheapest car  
The environmental cost  
of the Tata Nano

## MALARIA

How many monkeys  
make a vaccine?

## Going for gold

Your guide to greener  
jewellery

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# April 2008

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# The Nation's Toilets



A recent global study in the journal *Science* found that the health of our oceans is declining due to human actions such as climate change, pollution, fishing and shipping. The scientists at the US National Center for Ecological Analysis and Synthesis (NCEAS) found that the waters around the UK – that is the North Sea, the English Channel and the North Atlantic off the Irish and Scottish coasts – are some of the worst-affected areas in the world.

# Editorial

## It's the vaccine, stupid

Nobody made a big deal of the court decision. In fact the adjudication was shrouded in so much medico-legal babble that a lot of newspapers shied away from reporting it. Nevertheless, quietly and with as little fanfare as possible, the US courts have conceded a case in which a childhood vaccine caused autism.

There were dozens of qualifying statements, of course. The little girl was found to have a 'rare' mutation on a gene, T2387C, whose function no-one fully understands. This mutation apparently made her vulnerable to chemical assaults that can trigger neurological changes that mimic autism. In its written concession, the government exhibited the kind of furious semantic back-peddalling that suggests it is doing all it can to keep the floodgate for future claims closed:

'The vaccinations received on July 19, 2000 significantly aggravated an underlying mitochondrial disorder which predisposed her to deficits in cellular energy metabolism and manifested as a regressive encephalopathy with features of ASD [autism spectrum disorder].'

There are currently another 4,900 cases of alleged vaccine damage in front of the US courts. Zeroing in on the words 'aggravated' and 'manifested', campaigners reasoned that if a vaccine can aggravate an underlying condition that, in turn, can manifest into autism or autism-like symptoms, then the vaccine really did cause the disorder.

As campaigner David Kirby, author of the book *Evidence of Harm*, pointed out in a recent and very lucid summary of the case: 'When a kid with a peanut allergy eats a peanut and dies, we don't say "his underlying metabolic condition was significantly aggravated to the extent of manifesting as anaphylactic shock with features of death"... we say the peanut killed the poor boy.'

Like so many disorders, autism is really a collection of symptoms that has been brought together under the banner of a catch-all name.

Do the courts concede that some cases of autism are not really autism at all, but something else – and in the end does this distinction even matter? The fallout for the child and the family is just as devastating. And the distinction between 'aggravated' and 'caused' seems frustratingly, and perhaps purposely, vague.

Mitochondrial disease is considered rare in the general population. But among people with autism the incidence is between 10 and 20 per cent, making it thousands of times more common among these individuals. If this statistic holds true among those cases before the US Vaccine Courts then some 500 to 1,000 similar concessions could be on the cards, and that is a story that can't be ignored.

The case is important not only for long-time opponents of vaccines, but also for anyone concerned about the daily chemical assault on our bodies that comes with modern life. The nagging question has long been, how do we know who is most vulnerable? The answer is we don't know. Nobody is doing the research because there are just too many potential legal liabilities if they actually find out.

We know that, in general, foetuses and children are more vulnerable to chemical assaults because their bodies are growing and changing rapidly. But cases such as this show that for all our apparent medical and scientific sophistication we still know almost nothing about the intricate workings of the human body. Any minute, an underlying chink in the DNA armour could mean the difference between one person getting sick when exposed to a poison and another remaining unharmed. That, in part, is why we have – or should have – the Precautionary Principle; to protect the most vulnerable from both current and future harm.

As these vaccine cases unfold in the US we may have to start weighing up 'just-in-case', precautionary medicines more carefully against a more sophisticated concept of precaution.

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# Letters



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## THE IMPORTANCE OF BEING GRATEFUL

I was most impressed with your February article 'Born to Shop?' by John Naish. It struck a chord in me, especially in its discussions of the necessity of gratitude. In fact I feel it did not perhaps convey the point of giving thanks well enough, for gratitude is something, like forgiveness, that empowers the giver with a sense of connection with something beyond him or herself. Instead of simply thanking the grandmother who buys you new socks, or the boss who grants you a pay-rise, why not thank life itself and really mean it? Don't focus on what makes you better, stronger, luckier than others; enjoy feeling that very act of thanks. And don't forget to thank nature for its beauty and produce either.

**Thomas Lennard, by email**

## THE FUTURE OF FOOD

I would like to congratulate Joanna Blythman for her recent article on 'The Future of Food' (March). It certainly grounded my belief that current food systems are entirely unethical, uneconomical, inefficient and unsustainable. Nevertheless, to declare a 'public health message' in the pages of the *Ecologist* to 'base your diet around home-cooked, fresh, local, seasonal, unprocessed food' is unfortunately, going to do little to revolutionise the way we, as a nation, eat.

These ideas may resonate with the conscientious consumer, but how are we going to wake up the rest of Britain to the looming crisis? Most seem perfectly content to continue driving to their out-of-town hyper-supermarket and buying chicken korma ready-meals. There's a vast amount of campaigning and educating to do before we can even begin to imagine the general population baking their own bread or pickling onions, let alone cooking a nutritious and seasonal supper from scratch.

**Holly Derry-Evans, London**

## AGRICULTURE: NEW DEVELOPMENTS

Your latest feature on food and agriculture made many good points, but surprisingly

missed two of the most important recent developments. First, the development of organic no-till agriculture at the Rodale Institute, with mechanical weed control, has produced higher yields than conventional no-till or organic with ploughing, using less energy and sequestering more carbon – about one tonne per hectare annually.

Second, the huge potential of bio-char is ignored. Anaerobic heating of biowaste, or fuel crops grown on wasteland, produces biogas, and a stable form of charcoal residue containing about half the original carbon content. This can be used as a long-lasting and effective fertiliser and carbon sink, as in the *terra preta* or dark-earth soils of the Amazon region, where it seems to have remained for thousands of years. This kind of biofuel

production, now under intensive development, offers carbon sequestration and a benign fertiliser as by-products.

**Felix R FitzRoy, Professor of Economics  
University of St Andrews**

## SAVE OUR SOIL

A lot of people wonder what will happen when the oil runs out, but few ask what life will be like after the soil is depleted (March). So much of all soils are being grazed or cultivated for food crops that soil sustainability is becoming a major scientific and policy issue. Questions such as whether soils can double food production in the next few decades or whether soil is exacerbating global warming require long-term observation and analysis. Right now, little is being done to sustain soils with any sense of urgency.

Widespread cropping without nutrient recycling results in soil infertility. For example, scientists are concerned that agriculture in Africa has so degraded regional soil fertility that the economic development of whole nations will be diminished without drastic improvements of soil management. In response, soil scientists recently established the first global network of long-term soil experiments to generate more attention to how fundamental soil is to environmental quality, the global carbon cycle and climate change. For more information visit <http://ltse.env.duke.edu>

**Doug Page, California**

## Ecologist poll

Is it time for us to abandon the idea of economic growth?

67

per cent of you felt that the UK should be able to feed itself from its own farms

## END OF THE ENERGY COMPANY ERA

The thing that guiles me the most about the energy debate is not nuclear power *per se*. What galls, sticks in the throat and makes me want to scream and shout and stamp has nothing to do with how we produce electricity and everything to do with who provides the electricity.

Energy policy is decided by the Business and Enterprise department; that is the department whose purpose is to protect the interests of the energy companies (in this case), which means ensuring the status quo, not changing things too quickly (or indeed

noticeably at all) so the industry can continue to make its profit.

In the end, the alternative to coal and gas isn't nuclear, off-shore wind, carbon sequestration and storage, tidal, hydro, fusion or zero point, it is local micro-generation. That is every house with solar panels, wind mills, water mills, micro-CHP, ground-source heat pumps, shedloads of insulation and proper design.

Encourage households to be aware of how much energy they use – make it so that if they are sensible they don't pay any fuel bills at all. What would be the point of the energy companies then? What would happen to their business model? Where would they be able to leech their obscene profits from?

We are being misled. It is not about 'energy needs'. It is not about 'global warming'. It is about commercial profit, at the taxpayers' and energy-users' expense.

**Steve Simmonds, Birmingham**

## GENERATION WHY?

Generation Why? are to be congratulated for their environmental concern (February), but it is to be hoped they do not copy their predecessors of 1968, who so often adulated any brutal dictatorship provided it described itself as 'left-wing'.

**D. Taylor, Exeter**

## CLIMATE CHAOS

Further to Morgan Phillips' letter (February) about the Climate Change March in London on 8 December 2007 being more like a carnival than a protest, I'd just like to say that you are not alone in experiencing this feeling that there really is nothing to celebrate.

Worse than that, we had actually gone along to help steward the march, but left in disgust after just a couple of hours of appalling disorganisation and lack of communication. When the organisers are running a car engine for the best part of an hour to power a generator to pump up a plastic balloon to promote their cause you have to wonder if you are really in the right place. When the prime function of stewards was to hand out leaflets to an all-night party

## Daily dilemmas

In each month's issue, we ask a common ethical question that many of us ponder in our day-to-day lives, and people can go to our website and offer their suggestions as to how to answer it. In a subsequent issue we will publish the most practical and engaging selections in the letters pages.

**Which would you rather have more of – fields or fuel?**

Go to [www.theecologist.org](http://www.theecologist.org) to have your say

in South London, most of which would be thrown aside to litter the streets in their wake, what hope do the rest of us have? When the head steward comes along with a Starbucks coffee, complete with plastic top and then just discards the empty cup in the street for somebody else to clean up, you began seriously to worry.

I'm past anger. I'm just very sad if this is the level of commitment to the cause on a very basic level, and if this is what passes as acceptable 'green' behaviour these days.

**Alison Arnold, London**

## CONFRONTATIONAL VS CARNIVALESQUE

While it was wonderful to hear that Morgan Phillips was attending his/her first climate march, s/he should also appreciate the 'carnivalesque' tradition associated with protests. Since medieval times, carnival has been used as a means of subverting the dominant through humour and chaos. Whistles, drums, 'fancy dress and celebration' are fundamental to the narration of protest. Indeed, there has been a long association with the environmental protests and carnival atmospheres, in particular the anti-roads movements of the 1990s. It appears Morgan Phillips believes that environmental protest should have elements of 'confrontation and anger'. Again, this is part of the tradition of

eco-protest, most recently Seattle (1999), J18 (1999) and the May Day Protest (2000 onwards). Yet damage to buildings belonging to multinational companies and police stand-offs led to the news media representing protesters as 'jobs', 'idiots' and 'militants'. I can only assume this is where s/he gets the idea of what an environmental protest 'should be'.

If Morgan prefers confrontation to carnivalesque the question is, is it protest or climate change s/he has a passion for? Either way, carnival is part of environmental protests, and must remain so.

**Maxine Newlands, by email**

## TRAINS ARE RUBBISH

Some time ago I contacted the major train companies servicing the South West, as well as my local MP Mr Younger-Ross (Teignbridge), because I was and still am appalled that the waste on Britain's trains seems to be piled into large plastic bags and thrown into landfill. The only positive response came from South West Trains, which informed me that the company was piloting a scheme for recycling in some areas. It seems that for others the cost was an issue – a frustrating attitude, especially as most train waste is recyclable.

I travel on trains on most days of the week and often see the bags of waste gathered at the end of the carriages. On one CrossCountry train last week I saw six large binbags filled with newspapers, cans, bottles, magazines, cartons, boxes and so on. If industry cannot be bothered then why should I?

**Paula Heath, by email**

## ERRATA

• In the February *Ecologist* we incorrectly stated the UK has 223,600 sq km of blanket bog. This figure should have read sq ha.

• In the March *Ecologist* we incorrectly credited Michael Sutcliffe as the founder of Compassion in World Farming. Peter Roberts was the founder of CIWF.

## GENETIC MODIFICATION

## EASY CASH, BAD SCIENCE

PUBLIC AWARDS BODY ADMITS SEXING-UP GM RESEARCH FINDINGS

Public money to the tune of £131,000 has been spent on a report that claims to have found farmers 'upbeat' about genetic modification – despite its authors having interviewed only 30 farmers, half of whom had already grown GM crops.

The Economic and Social Research Council (ESRC) awarded the money to Open University researchers using a 'relationship-building approach' in order to investigate farmers' views on the importance of new technology in farming, and GM in particular.

The research included the views of just two organic farmers 'for contextual purposes', whose contributions were relegated to footnotes in the reports, allowing the researchers to define the phrase 'all the farmers' as 'referring to all those interviewed that were non-organic'.

The culmination of the research – an all-day workshop in London – was attended by only 10 farmers, in addition to 15 members of the farmers' 'communities of influence', which included

representatives from the biotechnology giants DuPont and Syngenta, as well as representatives of the pro-GM National Farmers' Union.

When the *Ecologist* asked how the ESRC could justify promoting such research as the views of 'farmers' in general, a spokesperson said:

'We accept that the phrasing of the opening line of the press release could have been more precise, however the facts as stated in the press release are accurate and stand as written.'

The funding body insisted that 'balance had been maintained' and that the research had been peer-reviewed, but admitted that it promotes all funded research 'independent of specific findings'.

Sustainable agriculture group FARM described the study as 'blatantly pro-GM propaganda' and 'poor-quality research'.

The report was released within a fortnight of research by the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), which claimed that the planted area of GM crops had increased by 12 per cent in 2007.

An examination of the figures by lobby group GM Freeze, however, revealed that ISAAA had falsely inflated its data by including for the first time a number of Chinese GM poplar trees which had been planted years earlier.



## DEVELOPMENT

## FAIRTRADE ATTACK

The Department for International Development (DfID) is funding a review of ethical labelling systems by a thinktank that has condemned Fairtrade and organic labels as having 'perverse' and 'overstated' effects, the *Ecologist* has learned.

In its monthly *Developments* magazine, DfID published an article by researchers at the Overseas Development Institute (ODI) which proposed a new 'Good for Development' label to enable consumers to make 'properly informed choices'.

'The Fairtrade labelling scheme... is a relatively narrow definition of what is good for development,' the report's authors wrote, 'and seems to imply that other trade is "unfair"'. They also criticised the Soil Association for considering removing the organic stamp from air-freighted produce.

In the place of 'Fairtrade' and 'organic' labels, the 'Good for

Development' label would acknowledge impacts including 'improvements in the investment climate' of developing countries and 'industrial diversification'. The certification would be given to all exports meeting a certain minimum standard.

The proposed label has been condemned by the Fairtrade Foundation as 'dangerous'.

'While we're keen to engage in the debate, slapping a catch-all label on to all imported produce could just make it more confusing,' said head of communications Barbara Crowther.

Soil Association policy director Peter Melchett said:

'Rather than being 'Good for Development', their proposed new label would seem to do more for illness and death – given it would apply to all food exports, whatever the methods of production.'

DfID was keen to distance itself from the

discussions, admitting to funding the review, but saying: 'We have not agreed to support a "Good for Development" label'.

NUCLEAR POWER  
WASTE COSTS

'Out of control' – that was how the Commons' Public Accounts Committee described the budget of the Nuclear Decommissioning Authority (NDA) in a Westminster evidence session.

Committee chairman Edward Leigh said that the £73 billion nuclear clean-up fee recently put forward by the NDA was just the latest in a line of rising estimates.

'It leads me to think that you are not in control of what is going on,' he told the chief executive of the NDA, Ian Roxburgh.

RENEWABLE ENERGY  
DRAGON POWER

The Welsh Assembly has stolen a march on Westminster by pledging to have a zero-carbon electricity supply by 2030.

In an ambitious strategy

## GO FIGURE...

**Two** million vehicles are scrapped each year – less than **half** that number is recycled properly. Some hospital meals are costing as little as **50p** each. The aviation industry expects Britain to need **1,100** new airliners over the next **20** years. The number of flights Britons make in a year will double to **eight** over the next **15-20** years. If the UK had to provide for itself it could support a population of only **17** million. India has lost more than **half** of its tiger population in the past **five** years. **One** square metre of solar cells could replace up to **250** hectares of biofuel plantations. An indigenous language dies once every **two** weeks. Roughly a **third** of last year's UK farm sales went to people buying for the view.



document, Assembly Environment Minister Jane Davidson set out plans to exploit Wales's considerable wind, tidal, wave and biomass resources.

Jonathon Porritt, chairman of the Sustainable Development Commission, described the target as 'eye-wateringly tough', but praised the roadmap's ambition.

## WASTE A WASTE OF WASTE

Emerging waste-treatment technologies are considerably more environmentally friendly than traditional landfill and incineration routes, says a new report by the Mayor of London.

The study shows that while gasification (which heats waste to produce hydrogen-rich gas) and anaerobic digestion (which produces methane-rich gas) could result in a substantial reduction of greenhouse gas (GHGs) emissions, both incineration and landfill result in a considerable increase in GHGs.

London Mayor Ken Livingstone called for a move away from such 'outdated waste disposal methods.'

## MASS MEDICATION FOLIC FEARS

The Food Standards Agency (FSA) has told major food manufacturers to reduce the levels of folic acid in their products so that the additive can be used to fortify bread without increasing the levels in people's diets to dangerous levels.

The FSA told food giants such as Unilever that if they did not reduce the amount of folic acid in their breakfast cereals, spreads and supplements then they could be forced to do so by the European Commission.

The extraordinary step came as a result of figures showing that if levels in ordinary foods were not reduced, fortifying bread could place as many as 380,000 people at potential risk of bowel cancer and

complications with leukaemia and arthritis treatments.

## CHANGING ATTITUDES NEW TABOOS

Fifty-eight per cent of people believe that throwing items away instead of recycling or reusing them should become a taboo in the future.

This is one of the findings that came out of a new piece of market research conducted for consultancy Ledbury Group and non-profit initiative Business in the Community.

It also showed that 47 per cent of people thought using the car for local journeys should be taboo, along with flying within the UK (43 per cent) and taking more than one foreign holiday per year (35 per cent).

## POLLUTION TREE POTENTIAL

Scientists at the Centre for Ecology and Hydrology have found that tree leaves are particularly effective at trapping polluting particles of less than 10 micrometres, known as PM10s.

Using a computer model based on data collected in the West Midlands, researchers worked out that increasing tree cover from 3.7 to 16.5 per cent would cut PM10 levels by 19 per cent.

Meanwhile, research by the



Department for Communities and Local Government revealed that less urban trees were planted between 1992 and 2004 than in the previous decade, and that many older trees face the chainsaw because of the worry over insurance claims.

## CAMPAIGNING RADLEY 1, NPOWER 0

In our December/January issue we reported that the future looked hopeless for Radley Lakes, the Oxfordshire wildlife haven slated as a dump for fly ash from nPower's Didcot power station.

We are now happy to report, however, that we may have been wrong. Tireless efforts by the campaigners and the support of Conservative, Labour and Green Party parliamentary candidates alike have led to a change of tack by nPower.

Despite insisting a year ago that it couldn't find a market for recycling its ash, the power giant now claims to have secured new opportunities for its waste in road-building projects.

The *Ecologist* has reported on the Radley Lakes story since November 2006.

## SOCIAL ECOLOGY GROUP RESILIENCE

Informal social networks – the connections within and between different groups of people – may be crucial in helping people adapt to the challenges of peak oil and climate change, researchers have discovered.

A 12-month study by sociologists at King's College London has shown that the informal networks give rise to what lead researcher Dr Mark Pelling described as 'reflexive adaptation' – methods of coping and changing that could quickly be reviewed and changed.

This trait would make members of such networks – of which the Transition Towns post-peak oil initiative may be an example – better able to respond to unexpected shocks.

A spokesman for the Department of the Environment, Food and Rural Affairs said that the Government should help such networks to thrive.



## GREEN WALK

A new web-based program has been launched allowing you to find the least polluted route between two locations, simply by entering their postcodes.

Using air-quality data collected by local authorities, the free service ([www.walkit.com](http://www.walkit.com)) calculates which route will expose a pedestrian to lower levels of nitrous oxide pollution.

Although the system currently only contains data for London, the developers hope that it will soon be available for journeys in other UK cities.

## NO PLANE ADS

Air travel and airport expansion are hot topics, and there's no better time to make your voice heard. One way is by signing this online petition – <http://petitions.pm.gov.uk/airlines> – which calls on the Government to ban advertising of flights. The petition's creator argues that by banning flight advertising, demand would fall and the sector would become less attractive to investors, slackening the demand for endless fleet and airport expansion.

## JUST FOOLING

This year, 1 April 2008 is Fossil Fools Day, a day of action against the fossil fuel industry, co-ordinated by the International Rising Tide Network.

To find out what's happening near you, visit [www.fossilfoolsday.org](http://www.fossilfoolsday.org)

## CONSERVATION

## OUR 'LIFE INSURANCE'

DIMAS STRESSES THE IMPORTANCE OF BIODIVERSITY IN ADAPTING TO CLIMATE CHANGE, BUT PUBLIC INTEREST IN THE OUTDOORS IS FALLING

As confidence in the potential of technological fixes to tackle climate change declines, scientists and policy-makers are increasingly looking to the resilience of the natural world to save us.

Speaking at a recent event in Brussels hosted by environmental coalition Birdlife International, EC Environment Commissioner Stavros Dimas demanded a higher priority for wildlife conservation. Referring to the EU's protected area network, he said:

'The EU's Natura 2000 network will be a central element in mitigating and adapting to climate change. The conservation of biodiversity should be treated like our life insurance for the future.'

He continued: 'Some level of climate change is inevitable and Europe's precious web of protected nature conservation sites will become increasingly valuable as wildlife struggles to adapt to rising temperatures.'

Dimas ended with a warning over the use of renewable energy technologies – biofuels in particular – arguing that they should not come 'at the expense of wildlife'.

His words chimed strongly with pleas by British conservation charity the Woodland Trust. Focusing on the impending UK Climate Change Bill, the Trust has called for 'a renewed emphasis on adaptation'. A press statement reads:

'The Trust believes that helping the natural environment adapt is central to the provision of key life-support services. By making our natural systems more resilient and creating robust habitats, both wildlife and humankind will benefit.'

But efforts towards increased conservation could be hampered by our waning love of the natural world, according to a US study.

By comparing records of visits at dozens of national and state parks in the US, Japan and Spain – as well as the issues of hunting licenses – the researchers found that levels peaked into the 1980s and have been falling ever since. Only the number of day hikes had increased.

The study, which is published in the *Proceedings of the National Academy of Sciences*, concludes:

'Declining nature participation has crucial implications for conservation efforts... Accordingly, it becomes less likely that attempts to raise public awareness of the current biodiversity crisis [will succeed].'



## POLLUTION

## BAD AIR, LOW IQ

Children living in areas of Boston, Massachusetts with high levels of traffic pollution have lower IQs and worse memories than those living in cleaner neighbourhoods, new research has shown.

Dr Shakira Franco Suglia of the Harvard School of Public Health found that scores in the IQ tests of 202 children were closely linked to levels of particulate pollution in the local environment.

Suglia believes the particles may cause inflammation and oxidative damage to the brain during childhood.

## GENETIC MODIFICATION

## BIOTECH BRUISERS

The bully-boy tactics of the GM industry show no sign of abating.

The American Soybean Association, which represents 22,000 growers, has described the EU's delay in approving GM

soy strains marketed by Bayer and Monsanto as 'intolerable', and warned that further delay could lead to 'massive retaliation on EU exports to the US markets'.

Meanwhile, Monsanto has threatened the French government with legal action after its MON810 strain of GM corn was banned from cultivation in the country due to its impacts on indigenous wildlife.

## CLIMATE SCIENCE

## ICE AGE MYTH DEAD

Another core argument of climate change deniers has been exposed as false. The myth that climate scientists are fickle – since in the

1970s they were predicting a new Ice Age and are now predicting global warming – has been exploded by Thomas Peterson of the National Climatic Data Center.

A survey conducted by Peterson of scientific journals of the time revealed that only seven supported the idea of global cooling, whereas 44 others predicted warming and 20 others were neutral.

The finding, which will appear in the *Bulletin of the American Meteorological Society*, shows that climate science has consistently supported the idea that the planet is warming.

## TECHNOLOGY

## HYBRID HYPE

Are we getting too caught up with hybrid cars? That's the opinion of two French researchers.

Writing in the *International Journal of Automotive Technology and Management*, Jean-Jacques

Chanaron and Julius Teske argue that the consumer demand for hybrid cars, egged-on by slick advertising and PR, is hindering the development of greener and more sustainable transport alternatives.

The authors see hydrogen fuel cells and electric vehicles as suffering while hybrid mania grips the automotive market.

More than 24,000 hybrid cars were sold in the United States in January alone.

## CONSERVATION

## BYE-BYE BUFFALO

Seven hundred and sixty of the last remaining 4,000 genetically intact wild bison have been slaughtered in Yellowstone National Park, Montana.

The cull was authorised by the Montana Department of Livestock under pressure from the cattle industry, which fears the bison will transmit the cattle



disease *brucellosis* to their herds.

It also came despite there being no documented cases of *brucellosis*-transmission from wild bison to cattle, and the fact that other wild animals infected with the disease, such as the Yellowstone elk, are free to wander in and out of the park without threat.

Mike Mease, co-founder of direct-action group the Buffalo Field Campaign, said: 'The Park Service needs to realise that it is responsible for protecting wildlife, not cattle interests.'

### FOOD ADDITIVES SWEET ENOUGH

Research by scientists at the Ingestive Behavior Research Center, in Purdue University, Indiana, shows that animals fed foods laced with artificial sweeteners ate more of the substance than the same food containing real sugar.

Scientists also found that rats fed on low-fat yoghurt containing the sweetener saccharin not only ate for longer than those eating sugared yoghurt, but also had less active metabolisms.

The authors of the research suspect that the sweeteners interfere with the body's ability to associate sweet tastes with high calories, which leads to excessive consumption.

### GREENWASH A LICK OF PAINT

Those attending the Sixth European Business Summit in Brussels – 'Green the Economy' – were met by Friends of the Earth activists who 'washed' copies of the businesses' CSR reports with green paint. Among those companies that ended up with paint on their faces were BMW, Volvo, E.on and Shell.

## NOW THAT'S... PROGRESS

- 1** Six years of gene-splicing research has led to the creation of a 'tearless onion' that won't have you in tears when you cut it. The scientists anticipate 'enhanced flavour profiles'.
- 2** Starbucks in the US will no longer offer organic milk. Staff were told: 'If a customer requests organic milk, let them know that our milk is now rBGH [growth hormone]-free'.
- 3** How does ASDA respond to growing consumer concern for livestock and farmers? By promising to be 'even more aggressive lowering prices', and calling for cost cuts.
- 4** Scientists in the US plan to scrub CO<sub>2</sub> straight out of the atmosphere and turn it back into petrol. The power source for this energy-hungry endeavour? Nuclear reactors.

### CLIMATE CHANGE RAPID THAW

A new study by NASA has confirmed fears that the surface temperature of Greenland's enormous ice sheet is rising.

Using satellite technology, the team also revealed that surface melting triggers substantial loss of ice below the surface of the sheet, rather than a slow thaw.

Dorothy Hall, senior researcher at NASA's Goddard Space Flight Center, in Maryland, and lead author of the study, says that the results show melt-water travelling very rapidly down through a mile of ice to the base of the sheet, which allows it to slip forward and speeds the glaciation process.

Hall believes that if air temperatures over the ice sheet continue to rise then the accelerating surface melt will 'play a large role in the overall loss of ice mass'.

### CARBON TRADING DE FACTO CO<sub>2</sub> PRICE

Remarks made by the president of the World Research Institute (WRI) suggest that Wall Street financiers are effectively already imposing a \$50 per tonne carbon price in their own calculations on energy investments, so sure are

they that the a new US President will introduce a carbon tax.

'There have been no new coal-fired power plants since TXU [cancelled eight of its 11 new plants]. All the new capacity is gas-fired,' said Jonathan Lash, president of the WRI. 'That implies a de facto price of carbon of something like \$50 a tonne.'

Although Lash said it was a 'back of an envelope' calculation, he based his figures on the extra investment needed for a gas plant rather than a coal-fired one.

### ENVIRONMENTAL LAW NO TRESPASSING

What do you do if a corporation plans to build a uranium mine on your doorstep? Perhaps follow the town council of Halifax, Virginia, which has just passed a law banning 'corporate chemical and radioactive bodily trespass'.

The new ordinance establishes strict liability and 'burden-of-proof' obligations for corporations and government bodies in any case of chemical or radioactive poisoning in the district that could be linked to the mine.

The law also strips corporations of their usual constitutional protections while operating within the town and recognises the rights of ecosystems to exist and flourish.



### THE COOL BOX FIGHTING GLOBAL WARMING AROUND THE WORLD

### IDEAS SWAP

The United Nations Environment Programme (UNEP) has launched the Climate Neutral Network, a web-based information exchange scheme designed 'so member organisations will not have to reinvent the wheel when it comes to cutting carbon'.

The ambitious project aims to create a network that is open to all, from 'Presidents, prime ministers and princes to people from Pittsburgh and São Paulo to Poznan and Apia.'

Costa Rica, Iceland, New Zealand and Norway are currently signed up, along with a number of cities and private organisations.

See [www.climateutral.unep.org](http://www.climateutral.unep.org) for information.

Along similar lines, the World Business Council for Sustainable Development (WBCSD) has set up the 'Eco-Patent Commons' – an intellectual property-sharing website that allows businesses to make patents for environmentally beneficial technologies freely available.

Although the WBCSD does not expect companies to open up trade secrets for free, the council hopes some less corporately-sensitive patents 'may provide greater value in a public commons'.

For more information, see [www.wbcd.org](http://www.wbcd.org)

# Slippery territory

Biofuels created from algae aren't as clean as they seem, says **Mark Anslow**



It has taken just one year for the land-based biofuels (agrofuels) bubble to inflate and burst. In February 2007, the *Ecologist* was almost alone in pointing out that growing energy crops for car fuel was ecological nonsense; now the tide of academic studies showing that agrofuels are neither energy- nor carbon-efficient seems unstoppable.

Undeterred, the biofuels industry has picked itself up and is now pointing towards emerging technologies as replacements for agrofuels. One of these is the use of microalgae.

The idea of fuel from algae was first tested in the 1930s – but serious research did not begin until the oil crises of the 1970s, when the US Department of Energy (DoE) embarked upon the 'Aquatic Species Program' – a generously funded hunt for an algal strain that could grow quickly and produce large amounts of lipids to turn into biodiesel.

The programme was cut short in 1998, partly as oil prices fell, but mostly because the researchers had not managed to discover exactly what conditions would make algal cells pile on the pounds and swell up with lipid fats, the key ingredients of biodiesel.

Since the programme ended, however, a flurry of start-up companies have grabbed headlines claiming to have solved the problems of 'algae-culture'. They are split into two main camps, which can be broadly described as the 'algae fishers' and the 'algae farmers'.

The algae fishers plan on harvesting algae from naturally occurring sources and include Aquaflo – a New Zealand-based initiative that aims to produce biodiesel by recovering algae from sewage management ponds and farm settlement tanks. Because the algae require no special farming and clean up the water in which they grow, Aquaflo argues the process is cheap and environmentally friendly.

The problem is that naturally occurring strains of algae don't tend to be suitable for making biofuel: they grow rapidly and tend to

convert nutrients into carbohydrate and protein, rather than the all-important lipids. Dr John Benemann, one of the lead scientists in the original DoE research, is guarded about the potential of using naturally occurring strains of algae as an efficient energy source. In a recent online article, he wrote:

'There are thousands of [wastewater treatment pools] around, but they are mostly small and their algae have little or no oil – at least the way that we operate those systems at present. Making oil from algae grown on wastewaters still requires significant R&D.'

On top of this, research by Brussels-based environmental thinktank Biopact indicates

that in some situations, harvesting algae grown in sewage ponds yields less energy than putting the sewage into a biodigester and burning the resulting methane gas.

Algae farmers have attempted to get around the low yields of naturally occurring algal blooms by controlling the environment in which specific strains are grown.

Two techniques have been used: closed, temperature- and nutrient-controlled tanks known as 'photobioreactors' (PBRs), and open ponds through which algae are circulated. Both have met with difficulties, with PBRs proving expensive to build and ponds susceptible to contamination by naturally present, low-lipid algal species.

Massachusetts-based group GreenFuel Technologies uses PBRs. It bubbles waste flue gases from industrial facilities through the algae-filled reactors, providing the microscopic organisms with the nutrients necessary to swell quickly into fat-rich energy stores. Once harvested, the algae's lipids are turned into biodiesel, its carbohydrates fermented into ethanol and its proteins into an animal feed.

But some scientists are sceptical about the financial and energy returns. Dr Krassen Dimitrov of the University of Queensland in Australia, an expert in biochemistry and

molecular biology, is the author of a paper attacking GreenFuel's technology. In a recent interview with *Biopact*, Dimitrov said:

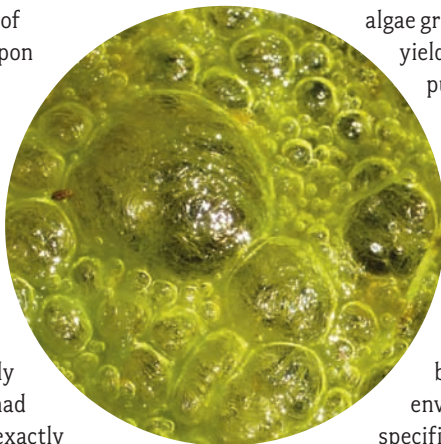
'With algae one has to always consider the trade-off between high growth-rates and how expensive it is to maintain conditions that would allow them. The other very important boundary is imposed by thermodynamics – the yield is limited by the amount of sunlight available – so improving the cultivating conditions follows the law of diminishing returns, as every percentage of yield that one can wrestle out becomes harder and harder as one approaches the theoretical limit.'

In December 2007, oil giant Shell announced an investment in Hawaiian firm HR Biopetroleum (HRB) Inc, whose scientists hope to get around the expense of bioreactors and the contamination problems of ponds by combining the two into a hybrid system. Algae are grown in the carefully controlled innards of a bioreactor then transferred to mature in large, lined ponds containing seawater. HRB claims to have produced an average of 9.5 tons of oil equivalent per hectare per year – greater even than the yield from a hectare of palm oil.

But as yet there are no reliable indicators of the energy balance of such facilities. HRB adds nitrate and phosphate fertilisers to its algae cultures, both energy-intensive to produce and transport, and uses chlorine to flush out its PBRs and ponds. Harvesting algae requires large amounts of energy: the algae must be collected, 'spun' in a centrifuge to remove water and dried in an oven at 60°C for 24 hours. Once the oil and carbohydrates have been separated, an alcohol (usually toxic methanol) is used to produce the biodiesel.

Benemann describes open-pond techniques as 'worthwhile trying', but is sceptical about the overall impact algal fuels will have.

'There are no silver bullets, no winner-take-all technologies, no technological fixes,' he writes. 'The solution to our energy and environment crisis can only come from, in order, "demand" management, efficiency improvements and new energy supplies, to which maybe algae processes can contribute.'





Sorry to bang on, Gordon,  
but it'd really help us out  
if you made companies  
declare their CO<sub>2</sub> emissions.



Millions of the world's poorest people are suffering because of climate change. The Prime Minister could still make a real difference with his Climate Change Bill by making it mandatory for UK businesses to report their full global carbon emissions. Please make sure he does just that by texting GORDON15 to 84880 and we'll send a postcard to Gordon Brown (and your local MP) on your behalf. Or go to [www.christianaid.org.uk/climatebill](http://www.christianaid.org.uk/climatebill) to send an email yourself. **Climate changed. Let's cut the carbon.**



## SHIPPING

# Cruise control

An iceberg sank the Titanic, now it seems international shipping is getting its own back. **Jacqueline Savitz** reports on an industry given the green light to carry on polluting

Suppose we found ourselves in the midst of an epidemic of a disease so contagious that to have any hope of preventing global catastrophe it would be imperative not only to contain it, but also drastically to reduce its prevalence worldwide. Suppose the experts were divided, not on the magnitude of the problem, but on the world's ability ever to contain it. Would we then expect one or more sectors of society to argue that they should be allowed to continue to spread the illness? What reason could they possibly give to justify continuing to infect people?

This hypothetical situation has distinct parallels to our current climate change challenge. There is no disputing that climate change is occurring. Each day brings new evidence that global climate change is accelerating even faster than we thought, causing ecological disturbances that are more serious than we expected. It will take action by every sector of society to contain the resulting damage. We do not have the luxury of picking and choosing one source of global warming pollution over another, or designing a portfolio of a few things that must change – every sector must improve. If we might ultimately fail in some areas, that is all the more reason

to focus on the others in the hope that they can make up the difference.

Many industries argue that its business is so far superior to others that it should be exempt from reducing its global warming pollution. Shipping is one such industry. Shippers say they have the most efficient method of transporting many goods, but with everyone else paying the cost of global warming, should shipping get a free ride?

Even if shipping releases less carbon per 'metric-ton kilometre' than its competitors, ships are still a major source of greenhouse gases, and therefore present one of many opportunities for the reduction of emissions. Carbon dioxide emissions from shipping are comparable to the entire CO<sub>2</sub> emissions of many industrialised countries – in fact, according to the latest statistics, only five countries release more CO<sub>2</sub> than the global shipping industry. That means giving shipping a free ride makes about as much sense as giving a free ride to the UK, Canada, Germany or Australia.

The shipping industry is also responsible for nearly a third of the world's nitrogen oxide emissions, as well as emitting soot, or black carbon, which is a stronger warming agent than CO<sub>2</sub>. On top of all that it is responsible for a quarter of all Arctic warming.

Unfortunately, current Government requirements do not drive needed reductions. In fact, shipping is essentially getting to carry on full speed ahead gratis. It is not regulated under the Kyoto protocol. The US does not directly regulate global warming pollutants (carbon dioxide, nitrous oxide or black carbon) from shipping. The Bush Administration seems to be looking to the International Maritime Organization to step in and regulate ship pollution internationally, but history has shown this process to be extremely slow and ineffective, which means action is needed at the national level now.

While some in the industry have argued against regulation, their actions point to viable solutions that could put a big dent in shipping's contribution to the problem. One of the best pollution-control measures that could be required of ships is one that each of us contends with every day – simple speed limits.

Reducing speed by just 10 per cent would result in a 23 per cent reduction in emissions from ships. This simple action, which requires no retrofit and no new equipment, could single-handedly reduce by nearly a quarter the contribution of ships to the climate problem. A larger reduction in speed could achieve even more pollution control. Moreover, this is fiscally beneficial to the companies since that 23 per cent emissions reduction is achieved by increasing fuel-efficiency – less fuel is burned, translating into a 23 per cent saving on fuel costs. The actual amount saved is increasing

Shippers say they are efficient. But with everyone else paying the cost of global warming, should shipping get a free ride?



as we speak due to escalating fuel prices.

Industry sources agree that reducing speed makes sense. George Gratsos, president of the Hellenic Chamber of Shipping, said a 20 per cent speed reduction would have 'few repercussions' for the world economy. Such a reduction would reduce emissions by more than half, possibly as much as 65 per cent. Ever since fuel prices started rising, shippers have got on the speed reduction bandwagon. Koji Miyahara, president of Japan's NYK Group, initiated a 10 per cent speed reduction fleetwide, expecting to save 25 per cent in fuel costs – possibly translating into \$25,000 daily savings for an average-sized container ship.

Critics may complain that 'time is money', but if the fuel savings don't make up for lost time, a little creative thinking and improved planning can easily ensure that any time lost is made up for in port. For example, scheduling ship loading and unloading the way airports schedule gate times could eliminate the multiple lost days that ships commonly spend waiting in port.

Besides slowing down, ships could take a host of other steps to reduce global warming pollution, including using cleaner fuels and improving the design of the hull, the bow, the stern and even the propellers. Most of these steps work because they increase fuel-efficiency and thus they too have financial benefits to the companies.

So why not start now? This industry is growing rapidly – marine transportation, as measured in metric-ton kilometres, has nearly tripled since 1970, and has grown by about five per cent per year for the past several decades. If current growth continues, shipping emissions may double 2002 levels by 2020, and triple them by 2030.

Speed limits are a solution that can be applied immediately; the Ports of Los Angeles and Long Beach are already requiring them. But speed should be regulated at the national and international level as a first step in controlling emissions from ships – an important piece of the overall puzzle – and then other measures can be considered to finish the job. One thing is certain: we are all facing a global challenge and there should be no more free rides. **E**

**Jacqueline Savitz is senior director for pollution campaigns at Oceana (www.oceana.org), an international ocean conservation organisation headquartered in Washington, DC**

## CURRENTS

# Getting on the 'risk list'

**R**emember last summer when, in an attempt to thwart the upcoming climate camp, BAA went to the High Court to try to get millions of opponents of airport expansion banned from using motorways, the London underground and Paddington station? At the time the National Trust said the idea 'smacked of absurdity', Lib Dem Nick Clegg said it was 'daft, illiberal and dangerous nonsense' and the Mayor of London called it 'an attack on the right to peaceful protest'.

You might have had an inkling that BAA didn't have much time for democratic processes, but what they've been up to since really takes the biscuit. Secret documents reveal BAA and the Government set up a joint 'Heathrow Delivery Group' to steer through the third runway plans. BAA supplied the data on noise and pollution that formed the premise of the 'consultation' document. Opposition groups have been refused the chance to challenge this data.

The documents also reveal that elected councillors in West London, who represent two million people, have been put on a 'risk list' of those posing a threat to the runway.

BAA wrote part of the 'consultation', despite being one of the official 'consultees'. That could explain why it is littered with phrases like 'net present value terms' and 'mixed mode operations' – not exactly accessible language. Of course that's the whole point. Theoretically an opportunity for democratic participation, this 'consultation' was a fix-up from the start.

It asked nothing about whether or not the third runway should be built. It made no reference to global warming. Even worries within the barriers of the 'consultation'



– noise and local air pollution – were dampened by only 'consulting' one small region of London. Places like Putney and Fulham, for example, were not considered, despite councillors there reporting more constituent concern about unbearable noise levels than any other issue. That will be why they were excluded from the survey.

Encouragingly, affected communities are literally in revolt. Thousands of people have turned out to over 50 public meetings in the past couple of months. John Stewart, chair of HACAN, which represents people under the flightpaths, was overwhelmed by the outpouring of those speaking up against the runway plans. Indeed, political pressure has grown so great that even Brown loyalists like health minister Ann Keen have broken ranks on the issue. Every Mayoral candidate opposes the expansion; so great is the strength of feeling in London it would be political suicide if they didn't.

There is a pattern emerging with these 'consultations'. First the High Court found the one on nuclear power to be 'misleading', 'seriously flawed' and 'procedurally unfair'. Now I've seen Whitehall emails that show the coal plans for Kingsnorth are also subject to conniving between E.ON and the Department for Business. The German utility wrote to a BERR official, 'We need to work out a strategy with BMA' (Bob Marshall-Andrews, the local 'rebel' MP). It also 'profiled' the councillors opposing its plans and briefed Government officials – exactly as BAA did.

With ever-growing numbers of species 'at risk', we need more people willing to put themselves on the 'risk lists'. **E**

**Joss Garman is an environmental campaigner and journalist**

**Elected councillors in West London have been put on a 'risk list' of those posing a threat to Heathrow's proposed third runway**

Secretary of State for Health Alan Johnson announced in February that the Department of Health (DoH) would, over the next three years, make £42 million available to Strategic Health Authorities in England and Wales for new fluoridation schemes.

By presenting fluoridation as a means of preventing tooth decay, the Health Secretary confirms the practice is medication, which is carried out by water companies in violation of their customers' human right to refuse consent to any medical intervention.

Artificial fluoridation involves increasing the fluoride level in water supplies to one part per million (ppm). Fluoride's toxicity lies somewhere between that of lead and arsenic, and, like lead and arsenic, it's a cumulative poison. Only half of all the fluoride we ingest is excreted. Our bodies retain the other half. It is stored, mainly in bone but also in some soft tissues, such as the pineal gland.

Naturally occurring fluoride is commonly bound to calcium and is less bioavailable than the fluoride added by water companies to treat their customers, which comes from fluorosilicic acid. The fluorosilicic acid used in the UK and Ireland is believed to originate from phosphate fertiliser operations in continental Europe. The UK Department of the Environment will not name the producers.

Worldwide, some 350 million people receive artificially fluoridated water, representing just six per cent of the global population. Of this global total, 171 million are Americans; only two per cent of Europeans receive fluorosilicic acid on tap, comprising around 5.7 million in Britain and around 2.4 million in Ireland. In addition, World Health Organization figures show that dental health has improved as much in countries without fluoridation as in those with fluoridation.

With human rights abuse on such a grand scale, surely the science supporting the practice must be of the highest quality. Not so. The early trials carried out in the US and other English-speaking countries were seriously flawed. The errors and omissions in these early trials were meticulously documented in *The Greatest Fraud: Fluoridation* (1996) by the late Philip RN Sutton, a statistician and Doctor of Dental Science. Sutton's findings remain scientifically unchallenged to this day.

By the early 20th century, high levels of fluoride from natural sources were known

to cause disfiguring dental fluorosis. In the US at this time, the concern was how to get natural fluoride out of the water in the few places where it could occur at up to eight parts per million.

Before World War Two, the Aluminum Company of America (ALCOA) was one of a number of US corporations successfully sued for damage to humans, animals, crops and waterways caused by airborne fluoride pollution. One of the markers for this was dental fluorosis found in both humans and animals.

Fluoride is a byproduct of aluminium smelting. Capturing airborne fluorides solved one problem but created another – one of waste disposal.



HEALTH

## Riding the fluoride tiger

What possible good can come from adding a known poison to our water supply? None at all, argues **John Graham**

If the fluoride waste product could be added to drinking water on a heavily publicised premise that it benefited teeth – it would change people's perception of fluoride, provide a market for ALCOA's sodium fluoride waste and deflect attention away from what was causing dental fluorosis in the vicinity of fluoride-polluting industrial plants.

Behind the scenes, ALCOA played a key role in the collective march towards the first US fluoridation experiments in 1945. The US Public Health Service (PHS) declared itself in favour of adding fluoride to drinking water in 1950, a third of the way through two of the US fluoridation experiments.

The same year ALCOA placed an advert for its sodium fluoride in the 'Journal of the American Water Works Association'. Keen to support its new big idea, the US PHS made grants totalling more than \$10 million to other countries promoting fluoridation.

A new fluoridating agent emerged in the 1960s from the phosphate fertiliser industry – fluorosilicic acid, about which Rebecca Hanmer, a US Environmental Protection Agency (EPA) administrator commented in 1983: 'In regard to the use of fluosilicic [sic] acid as a source of fluoride for fluoridation, this agency regards such use as an ideal environmental solution to a long-standing problem. By recovering byproduct fluosilicic acid from fertilizer manufacturing, water and air pollution are minimized, and water utilities have a low-cost source of fluoride available to them.'

To date, no safety tests have ever been carried out on fluorosilicic acid, which is now used in most US and UK fluoridation schemes. Ten per cent of US schemes use sodium fluoride or sodium hexafluorosilicate.

In the mid-1970s, concerns about fluoridation and cancer led the US National Toxicology Program (NTP) to carry out cancer studies in rats. The results came in 1990 and showed a dose-dependent increase in osteosarcoma (bone cancer) among male rats treated with sodium fluoride. This should have been sufficient to stop artificial fluoridation, but the NTP claimed the results were 'equivocal'.

The US Centers for Disease Control stated in 1999 that fluoride's anti-caries effect was topical, not systemic, confirming that we do not need to ingest fluoride.

In 2000, the UK Government-funded York Review found no high-quality research to support pro-fluoridationist claims of efficacy, safety or a reduction in health inequalities. More high-quality research was called for. None has emerged from the UK to date.

Basel, the only Swiss city to fluoridate, ceased in April 2003 after Swiss scientists failed to identify one high-quality study to support fluoridation. Nevertheless, the Blair Government, in the Water Act 2003, removed water companies' discretion to fluoridate or not, ostensibly so that communities could 'choose' fluoridation after 'consultation'.

Recent guidelines from Chief Dental Officer Dr Barry Cockcroft show that such consultations will, in effect, be propaganda exercises followed by tiny opinion polls that will ask a leading question: 'Do you think fluoride should be added to water if it can reduce tooth decay?'

The West Midlands is fluoridation's UK flagship and its dental health is usually

compared to that of Manchester. In 1997, Wolverhampton, in the West Midlands, went from 32 per cent to 100 per cent fluoridated. In the following five years to 2002, dental health spending in Wolverhampton more than doubled and the number of preventative procedures increased by 50 per cent.

Over the same period, dental health expenditure in fluoridation-targeted Manchester and Lancashire was cut. This confounder clearly invalidates comparisons between the two areas.

In the US, the 2006 Scientific Review by the National Research Council (NRC) of the EPA's drinking water standards concluded that levels of fluoride between two and four ppm – higher than are currently proposed for the UK – were not protective of human teeth or bones.

The NRC Review Panel called upon the EPA to carry out a Health Risk Assessment to determine a new Maximum Contaminant Level Goal for fluoride. The EPA's starting point is to find the LOAEL, or Lowest Observable Adverse Effect Level. A safety factor of at least 10 should then be applied to protect vulnerable subsets of the population, such as infants, the elderly and those with impaired kidney function.

In November 2006, The American Dental Association issued advice to its members that infant formula should not be mixed with fluoridated water. A few months later, a briefing paper drafted by British Fluoridation Society chairman Professor Michael Lennon, with DoH knowledge, issued similar advice to UK dentists.

The DoH and water companies have a duty of care towards the people of the UK, and especially to vulnerable infants. If that is the case, why hasn't this advice been given to the near six million people being forced to drink fluorosilicic acid-dosed supplies?

With so much evidence against artificial fluoridation and none to support it, it is difficult to understand why it continues. The best explanation comes from US EPA scientist Bill Hirzy who, when interviewed in 2000 about his union's call for a moratorium on fluoridation, said of promoters: 'They are riding a tiger and can't get off.'

We may need to look to the courts for a tranquiliser dart. **E**

**John Graham is an Executive Member for the National Pure Water Association. See [www.npwa.org.uk](http://www.npwa.org.uk) for more details**

## POST-CARBON LIVING

# Blame the environmentalists

In a recent email, Canadian Professor of Ecology Bill Rees succinctly summed up our collective situation: 'To raise human enterprise ever further from thermodynamic equilibrium, we must degrade and dissipate ever-greater quantities of energy and material resources extracted from the ecosphere. We have passed the point where the ecosphere can provide sustainably all that we are extracting. Resources are depleted, entropy accumulates. Techno-industrial society has become pathologically parasitic on nature.'

The implication is clear. For us and millions of other creatures to survive, we need to redesign techno-industrial society. Economic contraction is bitter medicine, but it's part of the cure for what ails us.

Well, medicine is on the way. It's becoming increasingly likely that 2008 will go down in history as the year the second Great Depression began. The unravelling started with the sub-prime mortgage fiasco in the US and is spreading fast. Trillions are being lost in defaults and property devaluation, so get ready for more bank runs, a stock market collapse and perhaps a money panic.

Get ready, too, for a rousing round of 'Blame the Enviros'. The storyline will go something like this: 'We could have achieved wealth and comfort for all through the spread of advanced technology, but we lost our nerve. Anti-growth environmentalists talked us into putting climate and endangered species before prosperity and look at the misery they've caused.'

It's a lie, of course. This depression wasn't caused by voluntary cutbacks in fossil fuels or technology, but because of colossal financial malfeasance within an unsustainable economic system. Endless growth isn't



possible in a finite world, collapse is a matter of timing. Peak oil and climate chaos are inevitable products of an economy based on using more of everything.

A depression *will* ensue; it's how we manage the contraction that matters.

Foolish management would entail burning the biosphere for alternative fuels, propping up financial institutions without re-examining the wisdom of growth-based economics and responding to privation and misery with repression and war.

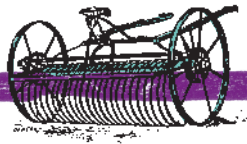
Intelligent management would start with an explicit commitment to redesign the global economy to run with less. We would assess ecosphere resources and identify a humane, equitable path toward gradual reduction in population and total consumption levels so that we draw only upon what Nature can continually provide. We would focus on those aspects of life that bring us increasing satisfaction without requiring more inputs of energy and materials. We would reacquaint ourselves with the values and virtues of community, self-sufficiency and modesty. We would redesign our cities to eliminate cars, while developing renewable energy sources and educating a new generation of eco-farmers.

Handled well, the medicine of contraction will leave Nature intact and humanity in a state of greater happiness, equity and peace. If not... Well, let's not go there.

The depression is just starting, but it's not too soon to start the discussion about how to navigate it. **E**

**We need to redesign techno-industrial society. Economic contraction is bitter medicine, but it's part of the cure for what ails us**

**Richard Heinberg is a Senior Fellow of the Post Carbon Institute, lectures widely on sane responses to fossil fuel depletion, and is the author of *The Party's Over and Peak Everything*.**



## AGRICULTURE

# Fallow and fertile

**Ed Hamer** questions the sanity of agricultural policies that increasingly threaten the sovereignty of the British farmer, as well as the food security of the nation

**Y**ou may be forgiven for assuming there's nothing too exciting about set-aside land. In fact, even among Britain's farming community the term tends to hold the same conversational currency as that of 'cross-compliance measures' and 'decoupling'. It comes as a welcome surprise then that a recent EU decision to reduce the area of required set-aside land to zero for the first time in its 20 year history seems to have cut through the colloquial manure and highlighted what's going wrong down on the farm.

When announcing the effective removal of the provision that requires farmers deliberately to take land out of production, EC commissioner Mariann Fischer Boel kindly reminded farmers that: 'A zero per cent set-aside rate for 2008 still allows farmers to leave land uncropped or to participate in environmental schemes'. I'm sure they would if they could, Madame Boel, but considering the price of wheat has risen from £120 to £250 a tonne in the past 12 months I think it's safe to predict a bumper cereal harvest.

Understandably, environmental groups such as the RSPB and Natural England are immediately concerned with the habitat loss. According to a survey conducted by the Department for Environment and Rural Affairs in response to the announcement, it is estimated that the area of farmland under set-aside will effectively half from 395,500 ha in 2007 to less than 200,000 ha this year.

Apart from environmental concerns, this recent development raises important questions about the sanity of an agricultural policy increasingly dislocated from the countryside. The reasoning behind the EU decision is not a sudden concern over the Commission's interventionist policies in agriculture, but instead an economic incentive to increase wheat production and offset soaring food prices. And this, in essence, is the problem.

Set-aside, unlike the bureaucratic language that surrounds it, isn't actually a new concept.

'Fallow' periods were traditionally used by farmers to maintain the natural productivity of their land. The benefits of leaving land fallow for extended periods include rebalancing soil nutrients, re-establishing soil biota, breaking crop pest and disease cycles, and providing a haven for wildlife.

Like many rural skills, the technique evolved along with a sustainable model of settled agriculture that supported the UK's population for well over 3,000 years. Up until 1939 it was estimated that 800,000 ha of British countryside was voluntarily placed under fixed or rotational fallows at any time. The idea seems bizarre now, that less than a generation ago British farmers would have had the freedom, let alone the financial security, to improve their land in this way.

The fact is farmers are no longer trusted to use their own judgement in managing the British countryside. If they were, set-aside areas would still be managed as the most effective means of building soil fertility. Inevitably, however, fallow farming has been deemed 'uneconomic' by the same logic that has seen agricultural imports and exports increase by 74 and 55 per cent respectively since 1962.

It is nearly half a century since the inception of the Common Agricultural Policy (CAP) and the coincidental death of traditional farming in the UK. The past 50 years have seen the majority of British farmers increasingly frustrated, initially through incentives to industrialise domestic production and restrictions to curb surpluses, and more recently through plummeting prices resulting from trade liberalisation.

Later this year, the CAP is booked in for a widely publicised 'Health Check', the policy's fourth major review since 2000. One farmer I spoke to recently placed it neatly in context

for me: 'Health check?' he said. 'They need a reality check – and while they're at it they can send through my overdue farm payment cheque as well!' This view is representative of the reputation the CAP has in the countryside today: on the one hand woefully incompetent; on the other essential for survival.

Agriculture in the UK is currently in a state of flux; never before has food and farming been under such public and political scrutiny. Rising oil prices and 'peak oil' are set fundamentally to reshape the face of an industry that has seen oil dependence spread from mechanisation through to agrochemical production and global supply chains.

The need for localisation has never been stronger. In February this year, the UK's Office for National Statistics announced that staple food prices are expected to rise exponentially over the next 12 months in direct correlation with the price of oil. The scale of habitat destruction predicted by the RSPB across the UK this spring is only the latest casualty of a policy that has consistently chosen to ignore the consequences of unrestricted growth.

Now is the time for action in preparing for UK food security in a post fossil-fuel age; now is the time when our farmers should be handed the autonomy to use their own initiative and produce local food for local markets. Now is not the time for legislation prompted by economic forecasts oblivious to a gathering storm. It is time, I would suggest – Madame Boel – to leave the cow shit in the countryside and the bullshit in Brussels. 🐮

**Ed Hamer is a freelance journalist specialising in agricultural globalisation issues. He also works on a small family farm in Devonshire**

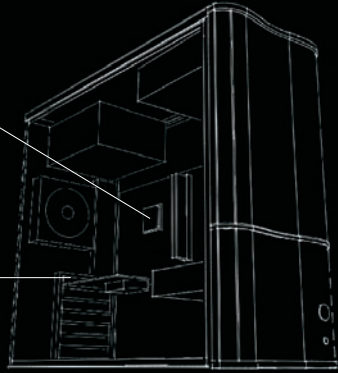
Fallow farming is deemed 'uneconomic' by the same logic that has seen agricultural imports increase by 74 per cent since 1962

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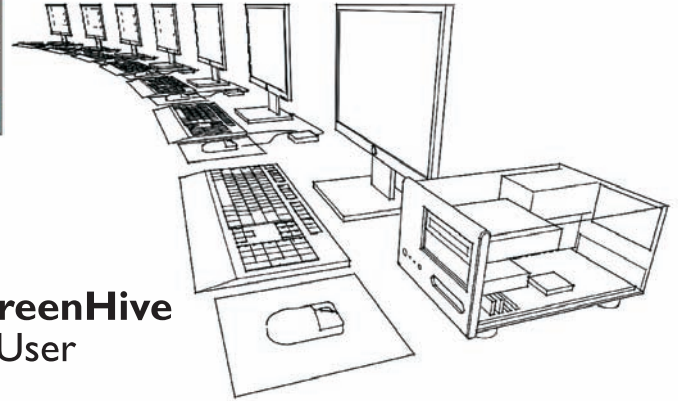
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## BEHIND THE LABEL:

# Roundup Weedkiller

A weedkiller that kills a lot more than simply weeds? If it's worse than the poison it's no cure at all, says **Pat Thomas**

**A** weed, as an insightful gardener once said, is just a plant growing in the wrong place. But to deal with the simple problem of plants growing in the wrong places, globally we spend millions each year on chemicals designed to kill them. Chemicals such as Monsanto's Roundup. The name will be familiar to GM watchers – all over the world food crops are being genetically modified (also by Monsanto) to be 'Roundup resistant', which allows farmers to spray this pesticide with impunity around their crops.

This irresponsible type of agriculture has led to increased resistance to the herbicide and the emergence of 'superweeds' – and thus increased sales of glyphosate, the active ingredient in Roundup, which farmers have to use more and more of in order to get the same effect. For instance, according to a new report by the US Center for Food Safety, per-acre applications of Roundup on soybeans rose by a factor of 2.5 (250 per cent) between 1994 and 2006. It took until 2002 for corn farmers truly to embrace GM, but between 2002 and 2005, glyphosate use on corn rose from 0.71 to 0.96lb/acre/year – a 35 per cent increase in just three years (see also box, opposite page). Thanks to Roundup, farmers worldwide are on a chemical treadmill they are finding it increasingly difficult to get off.

Since its introduction during the mid-1970s, global use of glyphosate has increased rapidly, and it is now the world's most widely used pesticide. In 2002, the global sales for glyphosate amounted to around \$4.705 billion and accounted for more than 30 per cent of the volume of total global herbicide sales. There are more than 70 glyphosate producers

in the world (excluding China). With more than an 80 per cent share of the market, Monsanto is the biggest.

So busy are we focusing on the big agricultural picture of Roundup and Roundup-resistance that it is all too easy to forget the fact that millions of gardeners in the UK and elsewhere routinely use Roundup to fight weeds on the home front.

Most glyphosate-based herbicides are formulated with one or more surfactants. The surfactant in a herbicide works in the same way as the surfactant in your shampoo – it makes the active ingredients work harder. In a herbicide the surfactant spreads the solution across the leaf, penetrates the leaf and thus enhances the uptake of glyphosate by the plant.

### Roundup reactions

Many people reason that Roundup would not be on sale if it weren't safe, or that it is safe as long as you use it according to the manufacturer's instructions. However, accumulating data suggests neither assumption are correct.

Short-term exposure to glyphosate can cause breathing difficulties, loss of muscle control and convulsions. Farm workers exposed even to small amounts of Roundup – by rubbing an eye, for example – report swelling of the eye, eyelid or face, a rapid heartbeat and elevated blood pressure, all as a result of the residues transferred from



the hands after touching leaky equipment. Accidental drenching is known to cause eczema of the hands and arms that can last for months

Roundup has never been fully tested for its cancer-causing potential. Although the US Environmental Protection Agency classifies glyphosate as a Group E Oncogen (no evidence of carcinogenicity in humans) this only because of 'a lack of convincing evidence of carcinogenicity in adequate studies with two animal species, rat and mouse' – in other words, the judgement is based on a limited number of studies of a limited number of non-human subjects.

Roundup formulations frequently make use of a class of surfactants known as polyoxyethylene tallowamines (specifically polyethoxethyleneamine, or POEA) derived from fatty acids from animals or tall oil (resin from pine wood). Some also contain a second active ingredient, a back-up herbicide that can help kill any glyphosate-resistant weeds. Chances are the hapless consumer won't know any of this from reading the label because labelling laws only require manufacturers to list the active ingredient. Buy a glyphosate-based product like Roundup and you may never truly know what kind of toxic cocktail you are spraying around your garden (and then traipsing into your home).

Not knowing what you are using has tremendous health implications, since such data as exists suggests that it is not glyphosate on its own, but glyphosate in

cancer. There is also research that shows that even brief exposure to glyphosate causes liver damage in rats. The research indicated that glyphosate acted in synergy with the surfactant used in Roundup to increase damage to the liver.

The label of Fast Action Roundup weedkiller claims it biodegrades leaving no soil residues. What actually happens is that glyphosate attaches itself, rather like a magnet, to minerals in the soil and remains more or less *in situ* until the soil is moved – by heavy rain, for instance. That is when the glyphosate can move into water supplies and have a more widespread environmental impact.

In April 2005, work by scientists at the University of Pittsburgh, US, suggested that Roundup is lethal to lifeforms other than plants – in this case amphibians. In an extensive study on the effects of pesticides on

## 'French scientists found that Roundup activates a key stage of cellular division leading to cancer'

combination with surfactants and other pesticides that is most harmful. Given this, it is amazing that while active ingredients like glyphosate are closely regulated, 'inactive' ingredients like surfactants are not.

Roundup has long been promoted as being safe for humans and the environment while at the same time effective in killing weeds. It is therefore significant when studies begin to show that this herbicide compound is not as safe as its manufacturers claim.

In the late 1990s, a Swedish study published in the journal *Cancer* revealed links between glyphosate exposure and the development of non-Hodgkin's lymphoma, a form of cancer. Scientists warned then that with the rapidly increasing use of glyphosate the rate of this otherwise rare cancer could also increase.

More recently a group of scientists from the University of Caen, in France, found that human placental cells are very sensitive to Roundup at concentrations lower than those currently used in agricultural applications. The study of Ontario farming populations showed that exposure to glyphosate nearly doubled the risk of late miscarriages. It also found that the ethoxylated surfactant used in the Roundup formulation studied doubled the toxic effect of the glyphosate.

In 2002, French scientists found that Roundup activates one of the key stages of cellular division that can potentially lead to

these 'non-target' organisms in a natural setting, the researchers found that Roundup caused a 70 per cent decline in amphibian biodiversity and an 86 per cent decline in the total mass of tadpoles. Leopard frog tadpoles and gray tree frog tadpoles were nearly eliminated by exposure to the herbicide.

Monsanto disputed the findings, saying Roundup was not intended for waterways, but this is hardly a relevant argument. Because of its widespread use, Roundup can be found in most waterways as a result of runoff – and it has the potential also to contaminate surface waters. In fact, in one 1998 survey Roundup was reported to have been found in surface water in the Netherlands, in wells sited under electrical substations that had been treated with glyphosate, in seven US wells (one in Texas, six in Virginia) and in forest streams in Oregon and Washington.

You don't have to go to a specialist garden centre to buy Roundup weedkiller; it is sold in the garden section of most supermarkets. The choice – buy a weedkiller and kill a weed – seems simple on the surface, but when you buy a product such as Roundup you are buying into a whole host of other issues – worldwide pesticide contamination, loss of biodiversity, increases in ill health and the support of GM crops – you may never had dreamed of. **E**

**Pat Thomas is Editor of the *Ecologist***

## Who benefits from weedkillers?

A new report from the US Center for Food Safety – *Who Benefits From GM Crops?* – paints a disturbing picture of the sheer scale of herbicide use (weedkillers, or herbicides, are the largest class of pesticides) and its implications. For instance:

- Four out of every five acres of GM crops worldwide are Monsanto's Roundup Ready varieties, designed specifically for use with Roundup.
  - Data from the US government reveals a huge 15-fold increase in the use of glyphosate on soybeans, corn and cotton in the US from 1994 to 2005, driven by adoption of Roundup Ready versions of these crops.
  - In 2006, the last year for which data is available, glyphosate use on soybeans jumped a substantial 28 per cent over the previous year.
  - Rising glyphosate use has spawned a growing epidemic of weeds in the US, Argentina and Brazil that are resistant to the chemical. In fact, scientists have reported glyphosate-resistant weeds infesting 2.4 million acres in the US alone.
- The increase in the resistance of weeds to glyphosate has led to an increase in the use of other toxic chemicals, for example:
- In the US, the amount of 2,4-D applied to soybeans more than doubled from 2002 to 2006. A known carcinogen, 2,4-D was a component of the Vietnam War defoliant Agent Orange.
  - The use on maize in the US of the pesticide atrazine, banned in the EU because of links to health problems such as breast and prostate cancer, increased by 12 per cent from 2002 to 2005. Atrazine is an oestrogen mimic and thus a potential carcinogen. Studies in the field have shown that it causes male frogs to develop female characteristics such as ovaries (see the *Ecologist*, February 2006).
  - In Argentina, it is projected that each year 25 million litres of herbicides other than glyphosate will be needed to tackle the glyphosate-resistant plant Johnson grass.



## END OF THE WORLD

# Grandmother Earth

Thirteen matriarchs from indigenous cultures are currently touring the world, promoting peace, unity and a respect for nature. **Nicola Graydon** meets one of them, **Mona Polacca**

**M**ona Polacca was 14 years old when she first heard the Hopi prophesy, but she remembers it as though it were yesterday.

'An elder came to our village and told us there were big changes coming,' she recalls, 'He told us that the things we relied on were being consumed at such a rate that we may be left with nothing. He taught us to know where our resources are: to know where our sacred water is; to know how to build our sacred fire; to know our herbs and medicines. It was all about survival on the most basic level.'

Mona remembers it so well because, as he was leaving, the elder predicted a big storm would hit her village by sundown.

'And that's what happened,' she says. 'It was an affirmation of his message that shook me to the core. It made me believe that what he was saying was real, not just talk.'

That, almost 50 years ago, was where Mona's journey began. Blessed with the gift of near-perfect oral memory, her elders spent hours teaching her the old ways and prophecies word for word, trusting their information would be safe in her hands. 'And that is pretty much the work I am doing today,' she says.

Mona is one of the International Council of Thirteen Indigenous Grandmothers, currently travelling the world to hold council, pray for peace and bring pressure on world leaders to take seriously the degradation of the Earth.

In October 2004, they came together from the Arctic Circle, North, South and Central America, Africa and Asia, all at the invitation of Jeneane Prevatt, known as Jyoti, a Cherokee spiritual counsellor who sent out over 100

invitations to elders around the world to honour the ancient matriarchal authority that once had the final say in all tribal matters, including decisions on war.

Thirteen grandmothers showed up in Phoenicia, New York, in lands once belonging to the Iroquois Confederacy. It was a powerful, magical call to service on behalf of the world.

'We all brought our prayer bundles, our water, earth and ash from our fires. Then the grandmother from Alaska opened her bundle and in there were 13 stones. She gave each of us one, telling us that when she turned 12 her great-grandmother had given her the stones and told her, "One day there will come a time when you'll be sitting at a table with 12 other grandmothers. Give these stones to them!'"

All the grandmothers shared prophecies about their coming together. 'Indigenous people have come through a time of great struggle, a time of darkness,' Mona says. 'We grandmothers, we have emerged from that darkness, see this beauty, see each other and reach out to the world with open arms, with love, hope, compassion, faith and charity.'

Since then the grandmothers have held five councils: In New York state and New Mexico, in the US, in Mexico itself, in Dharamsala, India, at the request of the Dalai Lama, and in the Black Hills of Lakota. In April they go to Australia; in July they will visit Gabon, Spain and France. Everywhere they hold ceremonies for the Earth and lead local people in prayer. Their agenda is broad: from universal evocations to lobbying on behalf of local issues concerning water, land and human rights.

Mona answered Jyoti's call because she has been fighting for indigenous rights all her life.

Her training in tribal ways actually began long before her epiphany at 14. From the moment she was born into the Colorado River Indian tribes she has learnt the ways of her people. Part Hopi on her father's side, and Havasupi and Tewa on her mother's, she learnt about the forced relocations and great migrations of her people, which led to a congressional act that consolidated four tribes on the Colorado River.

Though removed from their lands, her elders still taught the children the 'Indian way'.

"These are your relatives in the Indian way," they would tell us. "These are your brothers, your mothers. Be kind to one another. Share what you have with your brothers and sisters." And if someone had the good fortune to have more than they needed they shared it with the rest of the family and the community.'

From the earliest time Mona's mother would tell her, 'You are not in this world just for you. You are representing first your family, then your tribe, then your people. What you do and what you say will reflect on all of us.'

Since then Mona has been in service to her community, working with public health and drug and alcohol addiction. Currently she is studying for a PhD in Justice Studies at the Arizona State University. That is still her 'day job', although her work with the Council of Grandmothers takes her around the world.

Although the grandmothers work on a political level, their most important role, according to Mona, is prayer. 'When we travel to places we go and plant our prayers. Our water, our earth, the ashes from our fires, our medicines are offered as prayer. We are invited to come and pray, and all we stand



behind is the prayers. Prayer is our survival.'

I tell her that to most Western minds, prayer seems a flimsy hope on which to pin the survival of the world and ask her to explain how it works. She describes two incidents where she believes prayer helped stave off destructive developments.

'On the Fort McDowell Indian Reservation called the Verde River, there was a threat to build a dam so they could create waterfront property on this great lake. Only it meant they would flood out this tiny tribe who had no significance for the developers. The tribe called out for help, so indigenous medicine people came from the west and east, held ceremonies, prayed and put medicines there to protect the land, and they defeated the dam.' The tribe has since become very prosperous.

Another time, the elders gave permission for a corporation to mine gypsum on a sacred mountain close to Mona's own reservation, the one towards which she looked when she did her morning prayers. The elders believed the mine would bring much-needed jobs, but Mona knew they would be transitory.

'So I began to pray to the spirits of the mountain, asking that they take care of themselves,' she recalls. 'You know, they could never get equipment up that mountain. The trucks broke down and once they got the equipment up there, it broke down too. The company started losing money and pretty soon begged to be let out of their contract.'

The Indian way, or Red Road as it is known, revolves around prayer: prayers to the four

directions; to the Sun; to the elements; to the ancestors. As a child, Mona recalls prayers first thing in the morning, at meal times, before leaving house, before any projects were undertaken; always asking that the spirits of life support and protect them.

When she prays to the mountain or the elements is she 'empowering' them? Mona laughs. 'We are not that powerful,' she says. 'We are simply acknowledging their power and calling on that power to be present.'

She cites the research of Masaru Emoto, the Japanese scientist who measured the effects of human thought and vibrational presence on water showing the seemingly miraculous

## 'The grandmothers' agenda is broad: from universal evocations to lobbying on local issues concerning land and human rights'

patterns made by water's molecular structure. 'We pray with the elements,' she says, 'and he has proven that how you talk to water creates how the water is going to be.'

According to Hopi prophecy, immortalised on an ancient rock near Second Mesa on Hopi land, there are two roads that mankind is currently on: one is a life out of balance or *koyaaniskatsi*, a life in turmoil predicated on technology, materialism and greed. That road will terminate. But another road, the spiritual road, which is reached by a bridge of changing consciousness, stretches long into the future, predicated on a return to the rhythms of life in balance, in tune with the environment around us. The question is whether we will choose to cross that bridge, to take that road.

Mona is sure the great earth changes, called the Great Purification in Hopi prophecy, have already begun. She recalls her mother telling her that in one day thousands of people were going to disappear. 'I used to wonder about that. I thought it might be connected to the Christian prophecy of believers being taken up to heaven; then I thought maybe she was talking about alien abductions. Then I heard about the tsunami and they were saying "thousands of people had been wiped off the face of the earth" and I knew instantly this was what my mother had been referring to.'

Is Mona ultimately optimistic about our future survival? She recalls a pipe ceremony 28 years ago.

'This is what the elder said, "Things are beginning to change and we are praying, doing this ceremony, crying for the

ones who we are going to have to step over. Not everyone is going to embrace these teachings and walk a life in balance. They are going to fall. They are not going to be able to make it. And some of them will be people we love. But there will be those who will be able to carry on." That is what we were told and I still hear it today. There is a sadness that not everyone is going to be "saved", for want of a better word, but there has always been the certainty that some of us will survive.

'Ever since then we have been preparing ourselves. But sometimes I still ask myself, if I had to run for my life, could I? Now that is a very basic question.' **E**

**Nicola Graydon is a freelance journalist**



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# Farms and fields... or fuel?

Renewables good, fossil fuels bad... unless, of course, renewables begin to take up more and more land in order to meet our energy needs. **Paul Kingsnorth** adds fuel to a tricky debate

**O**n a bare and blustery moor in the Outer Hebrides, the future is being played out.

The Isle of Lewis, home to the ancient Callanish standing stones, to golden eagles and Atlantic salmon, to crofts and blackhouses, is rarely at the centre of anything. But it is currently the focus of a battle that not only has enormous local significance, but also is an indicator of a developing global conflict the significance of which environmentalists may not yet fully have grasped.

The battle is over a wind farm – potentially the world's biggest – which two powerful corporations want to build on moorland on the north of the island. The sheer scale of this open air industrial instalment would be

unprecedented: 181 white turbines, each 140m high, would be visible from dozens of miles away. If dropped on to London, it would stretch from the new Olympic Park in the East End right down to Hampton Court in the west.

The Lewis wind farm is supported by some local people, by the developers, by the European Commission and by many – though no means all – environmentalists. The contemporary green narrative, in which climate change not only takes centre stage but also crowds out virtually every other concern, makes it clear why. The world needs to slash greenhouse gas emissions deeply and rapidly, we are told – by as much as 80 per cent within 15 years – to prevent the climate 'tipping' over into runaway global warming. Action is imperative. Renewable energy projects must be brought online fast; they must be big and bold and ambitious, and they must help us to phase out fossil fuels. Oppose this and you are a short-sighted 'nimby' at best, and at worst a stooge of the

petrochemical interests that are destroying the planet for profit.

On Lewis, though, many people do oppose it – at least 13,000 islanders and outside supporters at the last count, including a majority of Lewis's population. And since each Lewis crofter stands to gain financially if the wind farm (or 'wind factory' as they prefer to call it) goes ahead – every crofter would earn £2,000 a year in rent, paid by the wind farm's owners – this is quite remarkable.

The reason becomes clear in the islanders' words. 'We've been brought up to respect and love the moor ever since we were tiny,' Catriona Campbell, a local school teacher, told the *Guardian* recently. 'It's a piece of ground which means so much to us. It's just part of us.' Covering the moor with huge turbines, access roads and pylons would, she said, 'just break my heart.'

In other words, this is not about the money. Neither is it about short-sighted selfishness, anti-environmentalism or any of the other

## Land wars

things that local objectors to such schemes are regularly accused of. The battle of Lewis is not the easily-told story of greens versus anti-green reactionaries. It is more complex, and more interesting, than that.

The question that hovers above it all is currently echoing around the world, and will only grow louder: in the fight against climate change, will the environment have to be destroyed to save the environment? Can the end justify the means? As the search for climate-friendly energy really gets going, this is the first skirmish in what will become a global war. A war for space. A war for land.

### Energy realities

For the past two centuries, humanity has relied for its energy on what the author Thom Hartmann elegantly calls 'ancient sunlight': fossil fuels, formed millions of years ago from decaying plant and animal matter, and now transformed into a concentrated power source like no other. The Industrial Revolution, world war, global agriculture, the human population explosion, massive material prosperity, unprecedented technological advancement – all depend utterly on fossil fuels. Without them, there would be no modern world.

But fossil fuels, as we now know, also cause climate change. Therefore we need to wean ourselves off them – and fast. We need to move instead towards 'renewable' energy sources: power harnessed from wind, waves, fuel crops and the sunlight of today, rather than of the Jurassic period. It sounds like a simple technological and political concern: how to manage the transition and how to get it done fast enough. But it is more than that.

Fossil fuels have two major advantages over any other form of energy yet discovered. First, they are compact and powerful. Second, they are underground. They are dirty, dangerous and, it turns out, environmentally disastrous: but they are also intensive, rather than extensive, and their power far outweighs anything that renewables are able to give us. The biologist Jeffrey Dukes has famously calculated that, in just one year, humanity burns fossil fuels it took four centuries to create. Replacing such power with power derived from just one year's sunlight – and wind and wave power, and other renewable sources – is a big ask indeed.

From biofuels to wind farms, solar panels to hydroelectricity, virtually every renewable energy source of which we know needs a vast amount of the planet's surface to operate

## 'This is the first skirmish in what will become a global war. A war for space. A war for land'

from. It's often said that one of the advantages of renewable energy is that it will end the era of conflicts over oil. But the age of renewables will see them replaced with a new generation of conflicts. Our need for land to produce energy will begin to compete with other needs – for land to grow food, for example, or the need of other species for space to exist. For decades our energy has been cheap, easy and largely invisible – we flick a switch and lights come on; we turn the key and the car starts – and, apart from the odd power station and row of pylons, we rarely see the mechanics of it.

All of this is about to change, however, and

the impacts will be far-reaching indeed. Producing enough renewable energy to keep an ever-growing global economy on its feet will require the industrialising of vast areas of farmland, wilderness, forest, desert, river and ocean all over the world. It will require us to 'farm' energy on a vast scale.

The conflicts that will be caused by this huge push for 'green' energy will make the fight over the Lewis wind farm look like a teddy bear's picnic.

### Biofuels

The most obvious current example of this developing conflict is in the increasingly bitter battle over biofuels. When the idea of growing crops for energy first reared its head, environmentalists got excited. It sounded green, clean and renewable – just the kind of

thing that should be promoted. Major NGOs spent years campaigning for government to promote biofuels. Only when they started to take off did many greens realise their mistake.

Biofuels, as the *Ecologist* was among the first to say, are a looming disaster. The amount of land that would be needed to grow enough fuel to support even the world's existing transport fleet would require more planets than we currently possess. What the biofuels revolution has actually done is set up a competition between biofuel crops and the alternative uses of the land they are grown on. Within 15 years, for example, 98 per cent

**Pictured:** Giant 'wind factories' with hundreds of turbines could become a common sight as we struggle to farm guilt-free renewable fuel from the air



of the rainforests of Indonesia and Malaysia will be no more. Illegal logging has been going on there for decades, but the demand for palm oil to make biofuels for our cars has accelerated it. According to Friends of the Earth, palm oil plantations were responsible for almost 90 per cent of rainforest destruction in Malaysia between 1985 and 2000. In Brazil, meanwhile, forests are falling in the Amazon, to be replaced by enormous plantations of sugar cane, another source of biofuels.

In addition to the tragedy that is the end of the great rainforests, biofuels are also taking over agricultural lands previously used for growing food crops. In the US, for example, maize grown to produce ethanol now makes up a sixth of the nation's corn crop, covering 11 million acres of land – and even this meets only three per cent of the country's demand for transport fuel. The amount of maize needed to fill the tank of a Range Rover with ethanol fuel would feed a person for a whole year. Fill your tank every two weeks for a year and you have taken enough food out of circulation to feed a hungry village. Sure enough, at the end of last year, the UN Food and Agriculture Organization issued a warning that food prices had risen an unprecedented 40 per cent in 2007, leaving 37 countries facing food crises and many of the poor unable to afford to eat. Biofuels eating into croplands, they said, was one of the culprits.

Ironically, it now seems that biofuels don't even do what they were intended to: new research has revealed that, once the 'carbon cost' of clearing land for biofuels is taken into account, virtually every biofuel crop actually produces more emissions than the fuel it replaces. It seems it is too late to burst the bubble, though. Trees grown for biofuels and GM biofuel crops are in the pipeline, and earlier this year the European Union – usually so keen to burnish its green credentials – pushed ahead with a disastrous directive requiring its member states to replace 10 per cent of the petrol used in their cars with biofuels, giving a huge boost to the industry and helping put more pressure on land across the world.

### A bitter battle

While biofuels are the most obvious current example of the conflict over land use set up by our pursuit of renewable energy, they are far from being the only one. Wind farms like those on Lewis – which will become more numerous as governments across the world set ambitious targets for wind energy



**Above:** Entire city blocks are razed to make way for the Three Gorges Dam in China

**Pictured:** Swirling rows of oil palms encroach further on a receding area of Malaysian jungle



Photographs: GETTY IMAGES

generation – will also spark conflicts.

In the case of wind power, the conflicts are more likely to be about aesthetics than about food production, but they will be no less bitterly fought for it.

The UK, which is said to have one of the best 'reserves' of wind energy in the world, is also one of Europe's most densely populated and industrialised countries, in which silence, wild beauty and open space is at a premium. A wind farm, whatever its carbon footprint, is inescapably an industrial structure, and industrialising rural, wild, beautiful or open land will and always should be unpopular. Wind power currently provides less than one per cent of Britain's energy, but the Government wants 15 per cent of all the UK's energy to come from renewables by 2015, and wind power is to 'make the main contribution'.

Advocates of wind power are currently excited about the potential of vast windfarms in the North Sea and around Britain's coasts, which they hope will be less unpopular than those on land. Wherever they are sited, though, it will mean a lot of turbines. It has been calculated that two million one-megawatt (MW) turbines would be needed to replace the world's coal-fired power stations. Yet even the enormous Lewis project's 180 turbines will generate just 600MW of that amount.

But wind power is peanuts compared to

what, currently, is by far the biggest source of renewable energy in the world: hydroelectric power drawn from large dams. Hydropower produces 60 per cent of the planet's renewable energy, and much of it is enormously controversial. Large dams, as the *Ecologist* has exhaustively reported, are a disaster on many levels: they involve the flooding of vast areas of land; they often require the forcible eviction of entire populations; and those in tropical countries actually produce greenhouse gases, through the rotting of vegetation in their flooded reservoirs.

There are currently 17 major hydroelectric plants under construction worldwide; 12 are in China, where the colonisation of land by dam projects is well attested and impossible to resist. The most well-publicised, the Three Gorges Dam, across the Yangtze River, will be the largest hydroelectric project in the world when completed. It will create a reservoir more than 400 miles long, displacing a staggering 2.3 million people from their homes, destroying wetlands that are one of the last homes of the endangered Siberian crane and submerging 1,300 archaeological sites.

The Three Gorges Dam is an extreme case, of course. But in more 'enlightened' democratic and supposedly environmentally aware nations, big hydropower is also enjoying a resurgence – and climate change is

## Land wars

the excuse. In the US, for example, California governor Arnold Schwarzenegger recently proposed the construction of two new dams and a canal, the first in 30 years, to tackle 'the impact of global warming' on the state's dwindling water supply. He is opposed by the Democratic Party and several local conservation groups, but is determined to spend \$5 billion on the schemes. Both those supporting the dam and those opposing it claim to be the true greens.

Schwarzenegger and his allies say they must 'protect the environment' by ensuring that California has enough water to survive the coming impacts of climate change – not only for people but also for plant and animal life. Sierra Club California, meanwhile, along with other green groups, says the dams are useless. Existing reservoirs are inefficient as it is, it says, and the State's water problems can better be solved by conservation, not by dams that will destroy more than they protect.

Closer to home, meanwhile, a similar scenario is being played out with the proposed construction of a barrage across the river Severn. On paper, this sounds like an impeccable piece of green technology: a huge barrage would be built from the coast of South Wales across to Weston-super-Mare. As sea water passed through at high tide it would be trapped by sluice gates and held until the tide receded. It would then be released, driving turbines that, according to supporters, could generate five per cent or more Britain's electricity – more than all our nuclear power

stations combined. The Government says its contribution to tackling climate change could be 'breathtaking'. The Sustainable Development Commission, headed by Jonathon Porritt, is in favour, though only if strict criteria protecting the local environment are applied.

But the small print is revealing. The barrage would have devastating impacts on the tidal flats of the river Severn, destroying the habitats of wading birds and the wider environment; the RSPB says it would 'destroy

## 'Even the most benign of technologies, when scaled up too far, can become destructive'

an irreplaceable national treasure'. Friends of the Earth, of which Porritt was once executive director, dismisses the scheme as 'a hugely expensive, environmentally damaging and legally questionable mega-project'. The scene is set for Britain's first battle over its very own hydropower mega-project.

### The scale of the problem

The lesson to be learned from all this is a sobering one. Renewable energy technologies as we currently know them are incapable of providing anything like the amount of power we have come to expect from fossil fuels. Even if technologies improve, which they will undoubtedly do, they will not do so fast or cheaply enough to prevent the growing conflicts over land that the spread of large-scale renewables is already provoking.

Friends of the Earth puts its finger on the heart of the problem when it uses the phrase 'mega projects'. While the principle of renewable energy in itself is not a problem, it would be useful for some in the green movement to be a little more sober in their breathless advocacy of renewables – because green technologies can sometimes have a distinctly un-green downside. And green technologies – any technologies – on this sort of scale are going to be undemocratic, top-down, unaccountable and, potentially, very destructive indeed.

Scale, in the end, is all. We are moving from the age of fossil fuels into the age of renewables. The technologies are different, but the politics, and the power structures, are the same. If we simply replace one set of destructive mega projects (open cast mines, oil patches, nuclear power stations) with another (wind factories, big dams, biofuel monocultures), then even if we manage to

prevent disastrous climate change we will have created a century's-worth of new environmental problems. Even the most benign of technologies, when scaled up too far, can become destructive. The EU, for example, is currently deciding whether to spend £5 billion on a string of giant solar power stations along the Mediterranean coast of North Africa, which would supply Europe with as much as a sixth of its energy – by industrialising parts of the pristine

ecosystems of the Sahara.

This is as much a problem about social justice as it is about environmental health. Renewable energy projects on this scale exist to provide the global consumer class, whose ranks swell every day, with the profligate levels of energy to which they have become accustomed. And those who suffer from these mega-projects are usually the marginalised: the forest-dwellers; the small farmers; the hungry, whose hunger will only increase as croplands are used to grow petrol not food; the communities displaced by dams, plantations or solar arrays. Not to mention the myriad other species for which our rush for green gold could be fatal, and very final.

We are engaged in this mad scramble to meet our energy 'needs' because we cannot conceive of making do with less than we have. We regard energy as our right, and we are in denial. Denial that the age of cheap energy is coming to an end and denial – which some environmentalists are guilty of colluding in – that renewables, however inhuman their scale, may not fill the gap.

The reality seems to be that we have a choice. We can accelerate the destruction of the natural environment worldwide in a desperate attempt to provide 'green' energy to prop up our destructive lifestyles; or we can accept that we are going to have to make do with less energy, start reducing our demand for it and ensure that any renewable projects we do promote are human-scale and accountable to those they are intended to provide for. If we can't or won't make the latter choice, it may be that nature, so close to breaking point already, will make it for us. **E**

**Paul Kingsnorth is a freelance journalist and author of *Real England* (Portobello, £14.99)**

**Pictured:** From the farm to the fuel tank. Running the world on biofuels would require more planets than we currently possess





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# Spinning wheels

The world's fastest-growing consumer market will soon have the keys to the world's cheapest car. Fasten your seatbelts, says **Dan McDougall**. Photos by **Robin Hammond**

**T**his is the Indian dream!' shouts Mohit, clutching a tattered plastic bag as he joins the impatient throng gathering at Hall A of the Auto Expo in New Delhi. Around us more than 100,000 Indians are aggressively jostling for space and a precious glimpse of the £1,200 Tata Nano, the world's cheapest car. It is a vehicle that, put simply, costs less than the optional DVD player on the new Lexus LX470 SUV.

'It is truly the people's car,' he says with tears welling in his eyes. 'It is for all of us.' As he speaks he drops his bag, which spills out its contents, a runny fusion of soupy lentils and dried up roti – his lunch. On the floor beneath Mohit's torn and grubby sandals are dozens of black-and-white promotion flyers for the Nano. Each one bears the grainy but unmistakable image of the Model T Ford, a car

that, in 1908, changed the world. History, as they say for good reason, has a canny habit of repeating itself.

The first affordable, mass-produced car in the world, the Model T retailed at a present-day equivalent of £2,000. Henry Ford's 'Tin Lizzie' revolutionised work and economics as much as transportation. Ford used assembly-line techniques and standardisation of parts and tasks to create vast economies of scale in his River Rouge plant, then the largest in the world – creating a method of manufacturing we now call 'Fordism'.

In present-day India we now have Tataism. Ratan Tata, the billionaire Indian industrialist is, in his own words, about to revolutionise the car industry and, in the process, will bring the option of owning four wheels to hundreds of millions of his countrymen.

In an age of unbridled optimism and

consumerism, the Indian public is being whipped up into a frenzy over a car that has yet to hit the showrooms.

Small wonder since the Nano costs half the price of the cheapest car currently on the market, the Suzuki Maruti 800. According to economic forecasters CRISIL (Credit Rating Information Services of India Ltd), at no more than 100,000 rupees 'the new price point translates into a 65 per cent increase in the number of Indian families that can afford a car.'

But rather than simply become a symbol of growth and modernisation for a nation, Tata's 'People's Car' has increasingly come to symbolise a David and Goliath battle between India's super-industrialists and the impoverished farmers who claim their land was seized by the government to make way for the new plant that produces the Nano.

Not only that, the creation of the vehicle is

– finally – galvanizing India's long-time marginalised and unpopular green lobby, which is growing increasingly concerned at the unbridled consumerism gripping the nation's emerging 300-million-strong middle class.

'Wheels truly show your status in India,' says Bengali market stall owner Venkat Banarjee, shouting above the rush-hour traffic heading across the Hoogli river. 'More than watches or clothes or even your home. If I had a four-wheeler I would have better marriage prospects in my village. I would be respected.'

'I have an old Honda motorbike, so I am looked down upon. To be able to afford a proper car, with four wheels – that would change my life; it would turn things around.'

So, four wheels good, two wheels bad, is a new middle-class mantra. Now, thanks to India's enigmatic billionaire Ratan Tata – hailed as nothing short of a messiah for bringing the 'People's Car' to India – the world's fastest-growing consumer market is about to be rewarded for its ambition.

### The Indian Mini

Tata Motors is India's largest commercial vehicle maker; its logo appears on buses,

dump trucks, ambulances and cement mixers. In recent weeks the firm has been linked with a buy-out of Jaguar, and the domestic and global auto industry is keenly watching the development of its ultra-economy car, expected to be on sale by the end of the year.

The Tata Nano is currently taking shape in a controversial 'Special Economic Zone' in Singur, on the outskirts of Kolkata. The 'Indian Mini' or the 'People's Car' is the culmination of a long-standing dream for Ratan Tata, which he believes will offer the 'miracle of personal transport' to India's masses and make his company a big player on the international stage. Few expect it to fail.

The car is thus a triumph – not of great invention, but of a new engineering philosophy rising out of the developing world, one that has the potential to change the way that cars everywhere are made.

Small, low-cost cars such as this are poised to become the next frontier for the global auto industry. As petrol prices continue to rise, consumer tastes around the world are shifting toward smaller, more fuel-efficient cars. Global demand for small cars is expected to grow by 30 per cent to 27 million vehicles by 2013, with the growth coming mostly from

developing markets.

In India, the Nano launch has triggered a small-car revolution. With the Tata People's Car now a reality, another Indian company, Bajaj, has announced the impending launch of the Bajaj-Renault small. The Indian firm Hero Group, best known for making motorcycles, is also said to be working on a mini-car, possibly in conjunction with a Canadian company. Maruti-Suzuki is developing what it says will be a 'competitively' priced 660cc car. Recently *The Times of India* newspaper reported that a low-cost computer manufacturer, Xenetis, also has plans to make a budget car.

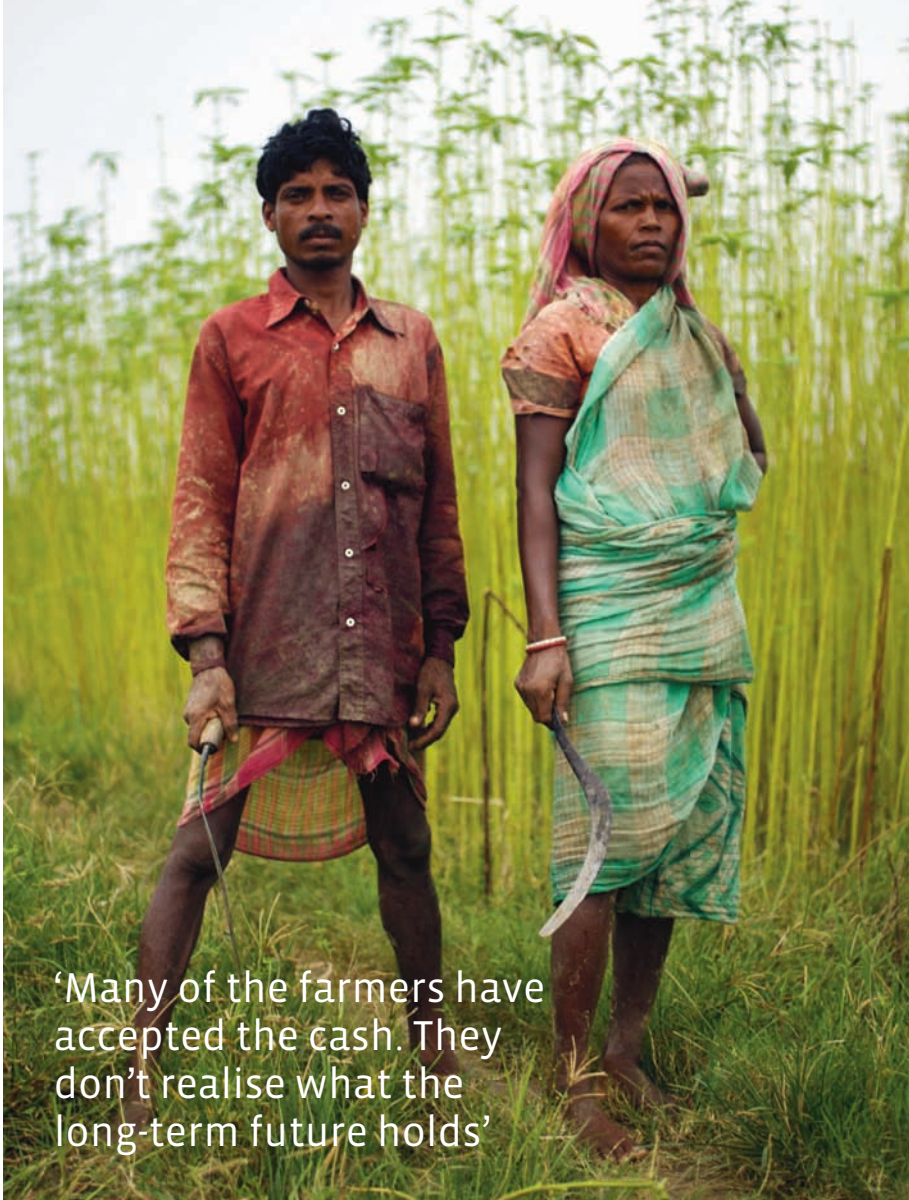
### Pollution matters

One of the key questions surrounding the world's least expensive car is why exactly is the Nano so cheap? For a start it has no radio, no power-steering, no power-windows, no air conditioning and only one windshield-wiper instead of two. The steering-wheel shaft has been rendered hollow and the car uses an analogue speedometer, which is less accurate but also less expensive than its digital equivalent. The boot fits little more than a briefcase and plastics and adhesives replace metal and bolts in certain parts.



**Left:** Villagers work in fields polluted by the Tata factory. A wall built to stop them protesting is patrolled by armed guards

'Wheels truly show your status in India. If I had a four-wheeler I would have better marriage prospects'



'Many of the farmers have accepted the cash. They don't realise what the long-term future holds'

Yet Michael Walsh, a pollution consultant and former US Environmental Protection Agency regulator, says that a car as cheap as the Tata is likely to lack the complex technology to maintain its initial level of emissions and that without such technology cars could pollute four to five times their initial amount before long. According to Walsh it is 'impossible' that emissions would stay low over the lifetime of the vehicle.

Climate change expert and joint Nobel Prize winner RK Pachauri, chairman of the Intergovernmental Panel on Climate Change, has also expressed concern, saying that the idea of a 100,000-rupee car bringing motoring to a genuinely mass market in India is giving him 'nightmares'.

Eminent environmentalists like Pachauri warn that with Indian emission norms still lagging several years behind those of the European Union and pollution levels at critical levels in many of the larger cities, the race to produce a super-cheap car is likely to impose massive costs on society that are not

adequately reflected in its sticker price.

Official figures show that fine particles of pollution, known as particulates, have reached 'critical' levels in more than half the 90 Indian cities monitored by pollution control authorities.

'What we are really worried about is the appalling congestion in India's biggest urban areas,' said Anumita Roychowdhury, associate director of the Centre for Science and Environment in New Delhi. 'Once people start using cars it will be hard to get them back, and selling cars for bottom dollar and encouraging banks to offer finance plans is a recipe for disaster. Tata reckons he will sell a million of these things a year. This will be an environmental disaster. In New Delhi, public transport manages more than 60 per cent of demand. Our immediate policy should be to retain and protect this, so that users do not make the move to cars.'

Other pertinent concerns continue to arise: for one, where exactly will all these cars fit in India's appallingly rutted and already

congested highways, road systems that are among the deadliest in the world?

Many environmentalists also believe the new vehicle will simply clog up already busy and broken roads, and add pressure to an infrastructure that is buckling. They stress the need to develop efficient, modern and affordable public transport, especially in cities such as Delhi, which now has a new metro system, but also a bus service that is overloaded and often deadly.

### Saviour of the road?

Tata counters that the car may actually prove to be the saviour of road safety. In Delhi alone, approximately 1,800 people die on the roads each year — about one-third of them on two-wheelers, while only five per cent die in cars. In Mumbai more than 3,000 die every year on the city's dangerously overcrowded commuter rail system alone.

Ratan Tata himself recently cited safety as a key motivation for developing this car.

'I observed entire families dangerously riding on two-wheelers,' he said. 'The father driving the scooter, his young kid standing in front of him, his wife seated behind him holding a little baby. It led me to wonder whether one could conceive of a safe, affordable, all-weather form of transport for such a family.'

Tata's key argument in favour of the Nano is compelling only when compared to the West. Though India's roads are often jammed with motorbikes and three-wheeled autorickshaws, its total number of cars is very modest by world standards. Figures suggest a vehicle density of just seven cars per thousand people. By contrast, Australia has 536 cars per thousand, the US has 477 and the UK has 373.

Yet, while such a figure gives India fewer than 10 million cars, the number of sales is still rising extraordinarily. Last year, more than one million cars were sold, and every year the number being registered increases by 16 per cent. In recent years, New Delhi alone has seen some 200,000 new cars being registered annually. Last year was exceptional — a total of 300,000 new cars were registered. And such figures only include those vehicles being driven legally.

Anumita Roychowdhury believes the Tata car is making driving too affordable and is ignoring the congestion and pollution pressures such a trend would create.

'To stop that, you have to invest in public

transport and you have to increase taxes on cars to reflect the true cost of driving,' she says. 'At the moment we're caught by a double whammy: the manufacturers are competing to build the cheapest car and we lack the correct public policy.'

The Indian government firmly disagrees. Manmohan Singh, India's prime minister, last year even launched a national 'automotive mission plan' to make the country the global destination of choice for the design and production of cars and car parts. The plan targets car sales of £73 billion and the creation of 25 million jobs in India by 2016.

### Battling the new colonialism

In Singur, West Bengal, where the People's Car is currently being turned from dream to reality in a state-of-the-art production plant, hundreds of farmers, forcibly evicted from their land to make way for the Special Economic Zone granted to Tata by the government, are refusing compensation 'pay-offs' for what they have labelled an old-fashioned colonial 'land-grab'.

They accuse Tata of seizing their land in order to create the Nano factory. Instead of a public consultation, a colonial-era land law from 1894 was exploited by West Bengal's local government in order to acquire the land for the corporation.

This situation is not unique. Over the last 12 months the Indian government has received applications for 250 similar Special Economic Zones, which involve turning huge tracts of land into gated business enclaves with middle-class townships attached. The

zones are controversial, but the message coming from government is simple: this is a time of change and development for the better, and the zones are the only way to attract foreign investors.

The land seizures had led to bitter clashes between farmers and the government. Around Singur and neighbouring Nandigram, in another Special Economic Zone – labelled a 'Special Exploitation Zone' by detractors – thousands of people have been injured and more than 20 local farmers killed as protests turn to clashes with police.

Protesters claim the land seized for the development of the plant is the most fertile on the plains of Bengal. The government denies this, and calls its compensation package 'the most exemplary in the country' and claiming the majority of the 14,000 farmers have already accepted it.

Driving across the monsoon-lashed landscape of Singur, agricultural life is still thriving. Long, narrow channels of monsoon water irrigate fields of rice, mustard, potato and hemp. Most farmers are on the third crop of the season.

'This plant is the absolute end of us because we know more will follow or it will expand and we will be squeezed out and forgotten about,' says farmer Bishnupada Mondol.

'As things stand, many of the farmers here have accepted the cash, but they don't realise what the long-term future holds. The money they are being offered simply won't last. People here have large families and they will spend the money quickly, then look around them and realise they have no land,

no income and no prospects. I, for one, will not give up my land.'

### Victory for the poor man?

Ironically it is the farmers and not the environmental lobby who are having a major impact on India's own version of the Industrial Revolution. In India land, above all else, evokes raw emotion. Poor farmers cling to it as their only source of food and sole asset. Government and industry want this scarce resource for development.

In truth, India's rural poor are resisting the rush for development at every turn.

In Nandigram, close to the Tata plant, where local farmers are fighting the creation of an Indonesian Chemical Plant, more than a dozen protesters have been killed in the past year. Late last year the villagers of the troubled district won a victory that threatens to derail the biggest push for economic and industrial development since India won independence 60 years ago. After the shootings, the Communist government of West Bengal, which has won plaudits from international big business for its Chinese-style attempts to attract investment, cancelled the Nandigram Special Economic Zone project.

'This is a great victory for the common man,' says Sayad Abdul Samad, who helped organise the resistance. 'Our people have suffered one imperial land-grab under the British and now it is happening again. But we will never give in. As long as we live, we will never give up our land. We are happy here. We don't want factories, we just want to live in peace.'

Ratan Tata may talk grandly of helping solve the transportation needs of poor Indians with his new car, but in reality the Nano is targeted solely at the country's newly aspirational middle class, which has new buying power as a result of the country's economic growth of nine per cent per year. The overwhelming majority of India's population of 1.1 billion, however, more than 800 million of whom survive on less than 50p a day, will not be able to afford the car.

But while the People's Car may realistically only be available to a small percentage of Indians, given the scale of the country's population and a middle class estimated at more than 300 million, the possibility for sales are still huge.

The Indian consumer is roaring for action. Most Asian success stories have been ones in which the government forces its people to save, producing growth through capital



**Opposite page:** The lives of villagers are now in the hands of rich businessmen

**Pictured:** Labourers are paid by the day to build the factory

'Personal consumption makes up a staggering 67 per cent of GDP in India'

## India's new consumers

accumulation and market-friendly policies.

In India, the individual is king. Young Indian professionals don't wait to buy a house at the end of their lives with their savings. They take out mortgages. The credit-card industry is growing at 50 per cent a year. Sales of fridges, cookers, televisions, furniture and DVD players are booming as never before.

Personal consumption makes up a staggering 67 per cent of GDP in India, much higher than China (42 per cent) or any other Asian country. Only the US is higher, at 70 per cent. Indian businessmen are giddy about their prospects.

The bitter truth is that the environmental lobby in India may already have lost the battle to consumerism. Car culture is already alive

and well in the country. More than 1,200 exhibitors took space at the recent week-long car show in Delhi.

Indian industrialists say that if they do not tap the new middle-class market – which is set to expand to 583 million in 2025, according to management consultants McKinsey – then their Chinese and western rivals will. International consultancy firm Roland Berger estimates that by 2010 an additional 30 million Indian households will be able to buy a car.

According to Anumita Roychowdhury, however, India's poor may yet have the biggest say in the future of the country.

'The advance of modernity has caused social dislocations, stirred passions and

provoked violence in ways new to a land where religion and caste have long been the great hate-makers,' she says. 'Urban slums are indescribable pits of misery. Deforestation has led to catastrophic floods, and pollution of air and water goes virtually unchecked. Nevertheless, industrialism and its effects have become a predominant fact of life for millions of Indians. They primarily shape, and in many ways control, the Indian experience at this stage of its long 5,000-year history. It is the poor who will suffer most from industrialisation and exploitation, and it is the poor who will do most to stop it.' **E**

**Dan McDougall is a freelance journalist**



# Tata and the turtles

Tata is not limiting itself to dominance of the mainland. **Ashish Fernandes** reports on the sea turtles falling foul of the corporation in waters off the Indian subcontinent

**B**ombay House, Homi Mody Street, Mumbai – Tata HQ. The placid brownstone façade and the liveried guard beneath the awning at its entrance contrast starkly with the bustling noisiness of the street. The building is deceptively quiet. A casual passerby would have no way of knowing that this is in fact the headquarters of one of the fastest growing and most powerful

corporate groups in the world. From here, like the proverbial octopus, the conglomerate's tentacles are in almost every sphere of life in India, and rapidly spreading throughout much of Africa, Europe and the Americas as well.

Some 1,500km due east of Mumbai in the Indian state of Orissa, on the other side of the Indian subcontinent, the beach is alive. Puffs of sand are spouting up everywhere, as thousands of turtles clamber, crawl and dig

their nest holes. It's a cold, misty February morning and sunrise is just a few minutes away. The mass nesting, or *arribada*, of olive ridley sea turtles in Orissa is one of the wonders of the natural world; a sight guaranteed to leave an indelible memory on anyone fortunate enough to witness it, but one that is as threatened as it is amazing.

The beaches of the Gahirmatha Marine Sanctuary are one of the world's largest mass

nesting sites for olive ridleys. The turtles' traditional enemies in these parts have been traders in turtle meat and eggs, and, over the last couple of decades, the mechanised fishing industry. But a new, more powerful threat is now, quite literally, on the horizon. Tata Steel, the fifth-largest steel producer in the world after swallowing up the Anglo-Dutch Corus group for \$12.2 billion, is building a deepwater port at Dhamra, less than 15km from the turtles' main nesting beaches. The port will also be less than 5km from the Bhitarkanika Sanctuary, India's second largest mangrove forest and a Ramsar Wetland of International Importance.

While events at Singur (see previous article) and Kalinganagar (where farmers protesting Tata's plans to build a large steel mill were killed in 2006) catapulted its social record into the headlines, the Tata Group has been on a collision course with ecologists over the Dhamra port since 2004, when it announced its involvement in partnership with infrastructure company Larsen & Toubro. The project itself has been of concern since its inception in the 1990s.

The concerns at that time stemmed from the site's proximity to Bhitarkanika and Gahirmatha; there was little data on the environmental value of the port site itself. Since then, however, a scientific study in February-March 2007, commissioned by Greenpeace and carried out by Dr SK Dutta of the North Orissa University, one of India's leading herpetologists, has shed some light on the area's intrinsic biodiversity value. The mangrove snake *Fordonia leucobalia* and the crab-eating frog *F. cancrivora* were recorded for the first time in Orissa, with *F. cancrivora* being the first record from the Indian mainland. The mudflats and intertidal zone are also a breeding ground for horseshoe crabs, with more than a thousand recorded on the port site itself. These 'living fossils' are much valued for the copper compound in their blood, which has applications in the pharmaceutical sector and is extracted non-lethally in some parts of the world.

But this is not all: more than 2,000 turtle carcasses (victims of mechanised fishing) were also recorded on and near the port site – a clear indicator of the presence of turtles in offshore waters, something long denied by Tata officials.

The study's results created a furore at Tata HQ, but company officials remained tight-lipped in public. While the notoriously pro-



**Left:** Fishermen in Orissa will feel the effects of pollution  
**Right:** Greenpeace targeting Tata's port at Dhamra

industry Orissa state government spared no effort to malign the study's findings, Tata made no statement, a strange position for a company that misses no opportunity to talk about its transparency and social and environmental legacy.

Today, at the port site, the mudflats are being covered over, while dredgers are deepening a shipping channel offshore, in the same waters inhabited by turtles. Rather than address the concerns raised by environmental groups, Tata Steel is hiding instead behind an agreement with IUCN, the World Conservation Union, to prepare a 'mitigation' plan. Given that proper baseline data on the ecology of the site does not exist, it is hard to understand how impacts could be understood, let alone mitigated.

Tata's subsidiary, DPCL, has spared no effort to tout its deal with the IUCN as evidence of its green principles, despite a clear refusal to adopt a precautionary approach. Alternative port sites in less sensitive habitats have not been explored, though these were suggested to Tata as soon as its involvement was made public, four years ago.

The port itself, and by implication IUCN's agreement to provide a 'mitigation plan' for it, are evidence that the Precautionary Principle has been consigned to the rubbish heap. Both the IUCN and Tata Steel (a signatory to the Global Compact, the world's largest voluntary corporate responsibility initiative) are committed to the principle, at least on paper, but the port, by dint of its mere presence in an ecologically sensitive area, poses an



Image: GREENPEACE

environmental threat, meaning mitigation measures will, at best, be inadequate. How does one 'mitigate' against the destruction of the intertidal mudflats, the horseshoe crabs and other rare species found there?

The dredging of an estimated 60 million cubic metres of silt and sand will cause a significant alteration of the benthic habitat. Even if the port itself were miraculously to control both its light and marine pollution impacts, how would it control discharges from shipping traffic, accidental oil and chemical spills, and other pollution from ancillary developments that will spring up in the vicinity of the port?

The IUCN's increasing closeness to big business is worrying many conservationists. As Taghi Farvar, chair of the IUCN's Commission on Environmental Economic and Social Policy, notes: 'Several of the IUCN's members are disturbed by the apparent willingness to ignore the IUCN's founding principles in order to accommodate industrial interests, be it Shell or Tata. The IUCN was set up to protect nature, not big business.'

While a coalition of local and international groups continue the battle, the port's construction is commencing, even as the waters offshore swarm with turtles. Only time will tell how many more *arribadas* Gahirmatha will see, and how long the turtles can hold out against destructive and short-sighted development in their back yard. **E**

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# THE **END** OF ECONOMICS

It's the battle of the century. In one corner, the Economy – big, bloated, greedy and growing. In the other, the planet Earth – fragile, finite and fighting back. We are the referees who can change the game, and when Earth wins, we all win. **Jonathan Rowe** kicks off this series of articles with the view that it's not only the carrying capacity of the planet that is running out, but also of its people

It is a chronic and overriding concern of politicians in the West to bestir the growth of this thing called 'the Economy'. That term sits heavily in the public mind with the dead weight of assumption. Rarely do we stop to consider what exactly it means, what it is and – most importantly – what it is for. Those questions would set free a debate that has long been repressed but can't be much longer.

The original Greek meaning of the word 'economy' was the prudent management of the household. It had to do with the wise mustering of resources for the purpose of wellbeing. But the concept has been co-opted by the modern notion of economics, which has nothing to do with wisdom or wellbeing. Rather it has to do with that part of life transacted through money, and its central concern is the perpetual increase of this.

It is understandable that such increase could once be equated with wellbeing. When Adam Smith wrote *The Wealth of Nations*, life was hard, the world vast and the supply depot of nature seemed without limit. Railroads and factories were opening new vistas of output, along with a euphoric sense of the possible. That production led to wellbeing... Well, where else could it lead? How could goods lead to anything but good?

More than two centuries later that

assumption no longer works, and not only for environmental reasons. The connection between wealth and well, goods and good, has become increasingly frayed.

The question – the what of economics, as opposed to the how much – seems glaringly obvious, and yet to the professors and their amanuenses in the media it cannot arise. Their entire system of belief is premised upon the eternal beneficence of stuff – and stuff equivalents called 'services'. There is no need to look past the abstractions of the economic mind – output, growth, production, standard of living, all that – because whatever lies beneath them must be, by definition, good.

When buying lags there is no possibility, therefore, that people generally have enough; still less that they have begun to be bedevilled and depleted by what they have already. The model cannot tolerate that. We always need more – that's GDP and 'growth'. We need always to produce this 'more' with less work – that's 'productivity'.

The *what* makes no difference, just as long as there is more of it. To put this another way, there is a growing disconnect between economics and economy – between the autistic maths of output on the one hand, and the intelligent mustering of resources to meet human need on the other. Increasingly, individual and social dysfunction has become necessary for 'the economy' to function.

Can anyone look at the increase in things such as junk food, video violence, mobile phone chatter, addiction, traffic, clutter and pills upon pills – all the products of a 'healthy' economy – without wondering just what it is that politicians are stimulating when they say they are going to 'stimulate' the economy?

## From external to internal

There are two main critiques of the prevailing model. The first deals with distribution. A capitalist system (or perhaps any industrial system) has a built-in tendency to accrue benefit at the top. Thus the state must step in to spread the wealth around. The beneficence of the wealth is a given; the problem is that too much of it ends up in the wrong hands.

That's fine as far as it goes, but what happens when wealth is no longer conducive to a 'sound, healthy or prosperous state'? Even in its extreme form, in which the machinery of production itself belongs to the state, this critique ends up transposing the progress narrative of the market in that direction. As somebody once said, 'Turn Adam Smith upside-down and you still have Adam Smith.'

The more recent critique is ecological. It focuses on the embedded assumption that the supply depot of nature is limitless, and that a market will always conjure new resources into being as old ones run out. Ecological economics tries to remedy this fallacy through the price

system. It uses taxes, fees and the like to provide the price 'signals' that the market lacks, to push people to conserve resources that otherwise would run out.

Again, fine as far as it goes. Ecological economics is far better than the kind we have now. But it is still economics, in that it assumes the eternal beneficence of output, only with ecological costs factored in. So we get organic Ritalin. Mobile phones ringing everywhere but with special shields to protect users against cancer. Solar-powered videos in the back seats of hybrid SUVs that ensure parents and children never talk with one another. People so busy turning out recycled stuff that they don't have time for their families and communities.

There could be ecological accounting throughout the economy and it still would not be economic in the larger sense. Ecological economics deals with 'externalities', the unintended offshoots of activity that otherwise is presumed to be productive and benign. The car is the product, greenhouse gases the externality.

It is revealing of the mentality of economists that they regard the health of the atmosphere as 'external' to the central activity of life. The problem no longer is just that, however; it has penetrated into the realm of internalities – that is, the impact of this consumption upon those who are party to and supposedly benefit from it. The car is a problem not just because it pollutes, but also because of the way it precludes walking, isolates people from one another and disfigures cities so that such isolation is the norm.

Internalities are a forgotten dimension of the growth debate, which has focused almost entirely upon the limits in the external world – peak oil, for example, and the capacity of the atmosphere to absorb our gunk. But it is very possible that we will reach the limits in ourselves before we even get close to those.

### The culture of need

Milton Friedman, the fundamentalist of the free market, said that the word 'need' when used in the context of economics is 'always a fallacy'. Within the perimeters of his own belief system, he was right. Economics deals not with need but with 'demand': the desire to buy plus the means with which to do it.

The buying is the key; what drives it is irrelevant. The corollary, not often stated, is that people must be in a constant state of lack and want. No matter how much we have, we must want still more. Textbooks

say economics is the 'science' of the 'allocation of scarce resources'. Resources must always be perceived as scarce in order to be economic.

Friedman missed the point. Need really does matter, but the need in question begins not with individuals but with the 'economy' as a whole – an economy 'in need of need', in the words of John McKnight of Northwestern University in Chicago. We serve by wanting, and this makes demands not only on the natural habitat but also on us. For the machine to keep going, capacities must become incapacities, ease must become dis-ease, self-sufficiency must become dependency and social function must become dysfunction.

The result is an extractive industry that is everywhere and yet unnamed. Both society and the self must continually be mined for new forms of deficiency and new veins of need. Mining begets depletion, and this happens in many dimensions of experience, the most obvious of which is perceptual. Prosperity, as conventionally defined, requires continual conditioning to the belief of lack. Poverty must be redefined upward so that more people feel that they suffer from it.

## 'Prosperity, as conventionally defined, requires continual conditioning to the belief of lack'

The means of this conditioning, advertising, has come to fill practically every nook and cranny of conscious space. In the US, schoolchildren are now subjected to it on their buses, in their hallways and even in their textbooks. We are immersed in ads to such a degree that we start to become numb, so advertisers have to hit us harder, and then harder again.

But need is not simply a message that occupies space; it has become the governing principle in the design of space. Shopping malls are the obvious example, but suburbs too were conceived as spatial goads to buying. Get people out of urban apartments and into larger homes to furnish. Get them out of range of mass transit so they will have to use cars. In the 1920s, Herbert Hoover, as US Secretary of Commerce, actually promoted suburbs as Petri dishes of consumption and need. There should

be a shopping centre, he said, within half a mile of every house.

Most transportation systems in the US – from the early programmes of 'internal improvement' to the railroads, urban trolleys and interstate highway system that followed – have been aimed less at serving existing needs than at creating new ones.

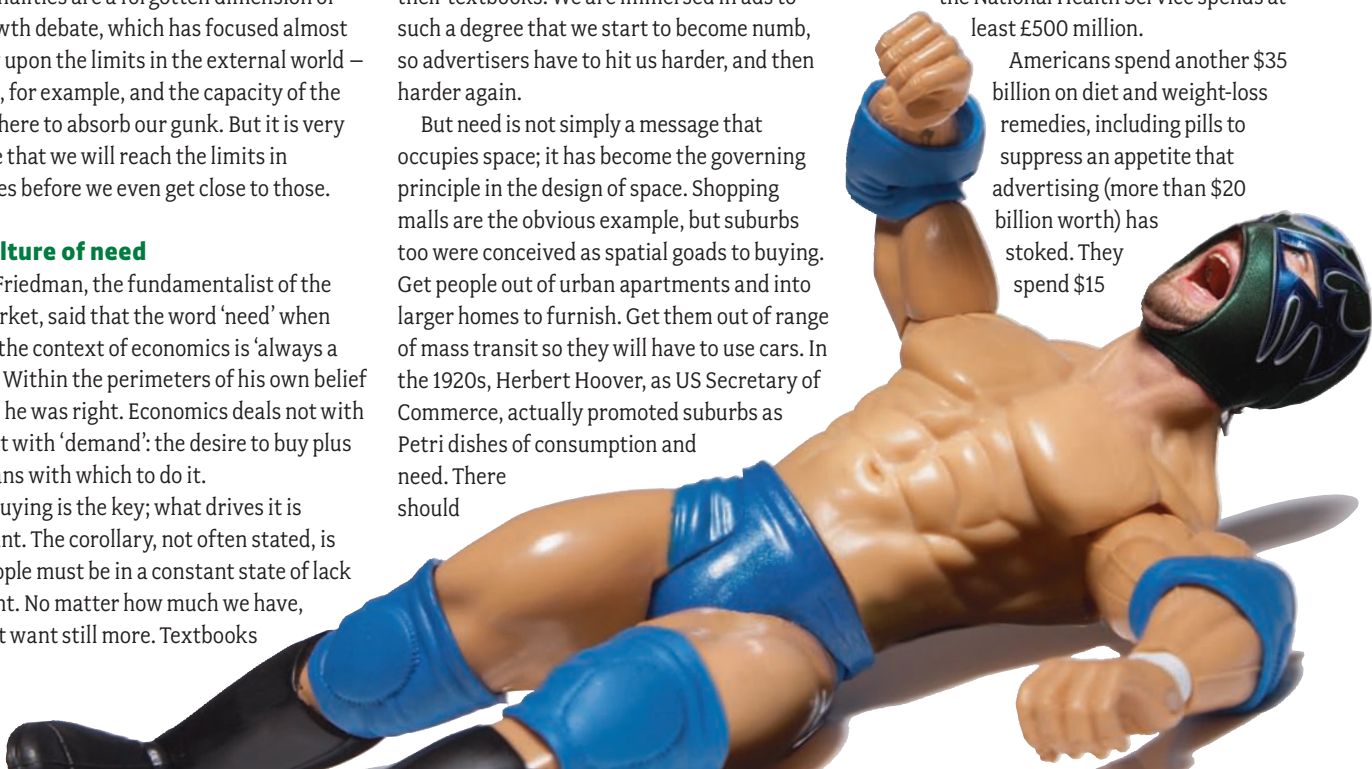
As with the design of space, so too with products themselves, from car bumpers that don't bump to inkjet cartridges that resist refilling. Economy means products that fill needs; economics requires products that create new ones. Plastic is the ideal product for economics because it is so hard to repair. Break something and you have to buy again.

This culture of need drains people financially and emotionally. It accounts for the prodigious increase in consumer debt. Worse still, need-creation has entered a grim new phase where the stuff we buy creates real problems that more buying seems necessary to address.

A prime example is food. Food is where markets started, and today it shows what the current version has become. It is supposed to 'maintain life and growth', according to the

*Oxford Dictionary*, but the foods most promoted now are the ones least conducive to this. People eat them and get fat. The resulting coronary problems, obesity and diabetes lead to medical bills of \$100 billion a year in the US; the National Health Service spends at least £500 million.

Americans spend another \$35 billion on diet and weight-loss remedies, including pills to suppress an appetite that advertising (more than \$20 billion worth) has stoked. They spend \$15



## End of economics

billion on health clubs and \$¾ billion on liposuction to vacuum out the flab. You could feed the world's hungry on what Americans spend to rid themselves of the effects of eating too much of the wrong kind of food.

In the charming euphemism of the economics trade, this is a 'virtuous circle': one form of consumption begets another in an unceasing quest up a mountain of delight. In reality it is a treadmill, an iatrogenic spiral in which the supposed remedy to a problem becomes itself a generator of more problems.

Iatrogenesis is a medical term that describes disease induced by a supposed healing process, but increasingly it applies to the economy at large. The automobile is a prime example. It is supposed to solve a problem – transportation – but as more cars are sold traffic gets worse and transportation becomes a bigger problem.

Americans burn close to \$9 billion a year in petrol sitting in traffic and going nowhere. In the UK, drivers spend an extra £2 billion every year because of cheesy bumpers that turn fender-benders into major repair jobs. Meanwhile the bad air contributes to respiratory problems: asthma treatment alone costs more than \$11 billion a year in the US; car wrecks give rise to more than \$32 billion in medical bills.

It is no accident that, according to *Business Week* magazine, the entire increase in jobs in the US since 2001 has come from the medical industry. On current trends that industry will produce 30 to 40 per cent of the new jobs over the next 30 years. 'We have to spend our money on something,' shrugged Robert E Hall, an economist at Stanford University, to a reporter from the *New York Times*.

One need is as good as another as long as there are more of them. We must become sick so that the economy – as conventionally

Teen magazines play on the body image insecurities of girls, with the result that anorexia and associated problems have become epidemic. Anorexia and bulimia are diseases of obedience to the conflicting messages directed at these girls – to consume with abandon and yet to be svelte. The cycle of binge and purge becomes a literal acting-out of this; a representation of an economy that is like the beast in Dante's *Inferno*, who 'can never sate her greedy will; when she had fed she's hungrier than ever.'

## 'We must become sick so that the economy – as conventionally conceived – can become well'

conceived – can become well.

Childhood is rife with these iatrogenic spirals. The function of children in economics is to play host to them. Junk food begets tooth decay, obesity and diabetes. A hyperkinetic media environment contributes to attention problems that are diagnosed as 'disorders' in need of pharmaceutical 'intervention' at a cost of more than \$1 billion a year in the US. A study in the UK found expenditures on these drugs for children and adolescents is likely to increase 10 times over from 2002 to 2012.

### The internal climate

What happens to the individual body and psyche happens also to the supportive structures of family and community.

It is one of the strange paradoxes of this economy of ours that people feel lonely when they are wired and connected, and empty and depressed when they have so much. A survey by *USA Today* a while back found that 25 per cent of Americans say they have no-one they can confide in. Depression is epidemic and stress has become a trademark affliction of a

## The commons: an antidote to globalisation

The corporate market has become the institutional equivalent of a compulsive eater. It has a built-in hunger that cannot be filled, and it is hard to stop the damage within the framework of its own game.

Total ownership by the state exchanges one kind of appetite for another. Regulation is a necessary but precarious peace. Taxes and fees – on emissions, for example – can use the price system to turn the reptilian calculus of the corporation in a less destructive direction, but ultimately it's like asking the crocodile to fly.

There is a need for a different kind of economic institution, one encoded for social stability and the husbandry of resources the way the corporation is encoded for their opposites. Such an institution exists, and has for centuries. It is the commons, and it is making a resurgence today because it produces in ways the market can't.

The term 'commons' can strike the modern ear as a relic from Ye Olde England. Yet villages and main streets are old concepts too, and they have taken on a new importance in this globalised age. The commons is a resource to which groups of people have rights even though they do not own it individually. In the past it was mainly land, air and water, but today it encompasses such things as knowledge, culture and social space generally.

Corporations and sometimes governments have a bottomless craving to turn them into markets. The commons is a kind of antimatter that can resist this 'enclosure'. Economists dismiss it as 'tragic' because – they say – it is inherently prone to over-use (i.e. what is owned by all is cared for by none), but that is a canard, born of hermetic economic logic rather than study of how commons actually have worked.

For centuries the English commons provided sustenance and social supports

for otherwise landless peasants. Commoners farmed their own plots in common fields, and enjoyed rights of hunting and forage on lands – often lands of nobles – they did not own. They shared implements and labour, and combined their herds to fertilise in fallow seasons.

Historian EP Thompson observed that the actual commoners of history were not, as economists assume, 'so lacking in common sense' as to destroy the source of their sustenance. When Parliament abolished their traditional rights of use – that is, when it 'enclosed' the commons and turned it into fungible real estate – it was not because the commons didn't work but because the commons wasn't suited for the industrial agriculture that Parliament wanted to promote.

Locality, place and social cohesion, all were seen as clogs in the divine physics of the market. Two centuries later they have become scarce because of that physics, and the result has been an instinctive recourse to the commons in old ways and new.

supposedly prosperous age – and prosperity is supposed to bring ease, not disease.

How could this be? When you look at what the so-called prosperity actually consists of the answer is not hard. We are dealing with an epidemic of market-related disease. The same forces that are making the atmosphere sick are making us sick as well – and not just because of the physical effects upon our bodies. There is something deeper at work, a kind of interior equivalent of climate change that could open up a whole new dimension to the battle to stop the exterior kind.

To most people, climate change is distant and abstract. It is an issue that appears to belong to experts who argue over parts per million and arcane models few can understand. Interior climate change is different. We don't need experts to tell us we are stressed out and depleted – financially, emotionally and socially – and this makes the problem immediate and personal.

To see that climate change is in here as well as out there is to make real the argument that solutions can enrich our lives rather than impoverish them – that indeed, these solutions are things we'd

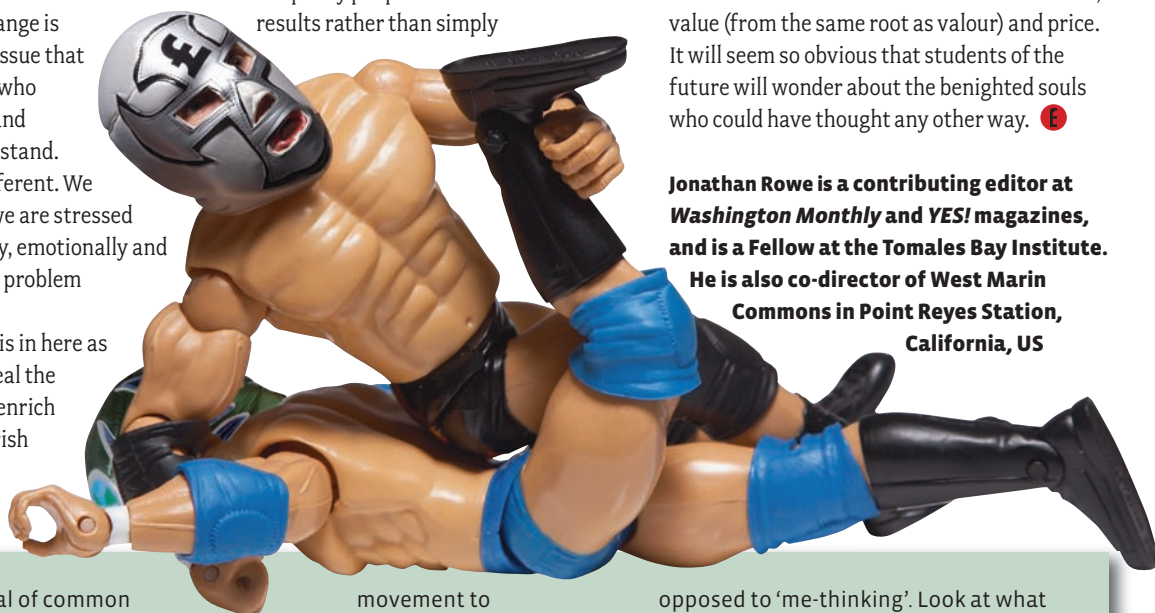
want to do anyway. It can open the way to non-market ways of meeting real needs – common gathering spaces and traditional main streets to help deal with loneliness, for example, rather than counselling and drugs. A big obstacle to action has been the belief that it would come at the expense of our 'standard of living'. To see that this standard is actually a treadmill of need is to put that argument to rest.

The realisation that the language and metrics of economics disguise dysfunction as prosperity would help open the way to better ones. The policy people would have to measure results rather than simply

output – ends rather than supposed means. They would have to assess the productivity of the food and automobile industries for example in terms of the health and transportation they provided rather than the way they do now, in terms of the stuff turned out per hour of work. The Gross Domestic Product (GDP) would go back to what it was intended to be – a measure of industrial capacity, not economic performance.

This next economics will be informed by genuine economy, reflecting an understanding of the difference between health and sickness, value (from the same root as valour) and price. It will seem so obvious that students of the future will wonder about the benighted souls who could have thought any other way. **E**

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One example is the revival of common spaces. The first American settlements started with these – the Boston Common, for example. Now cities across the US are going back to them, from Bryant Park in New York City and Copley Square in Boston to Pioneer Square in Portland, Oregon and Union Square in San Francisco.

Some years ago Detroit tried to revive its decayed downtown in the usual way, with a mammoth corporate office complex. It flopped. More recently, the city took the opposite approach and created an attractive commons called Campus Martius. Now people are coming in from the suburbs for concerts, skating and just to hang out. New investment has followed.

Another example is community gardens, which have become wildly popular in the US. These are direct descendants of the old common fields: people work individual plots in a context of community ownership and governance. The gardeners grow not only vegetables, but also community.

A kindred instinct is at work in the

movement to protect traditional main streets against the socially degenerative effects of WalMart and its ilk. Main streets function as commons, combining the commercial with the social and civic in a way that promotes human interaction. For that matter, the revival of the coffee shop – which is a kind of private commons – is part of this trend. Even Starbucks defines itself as a third place between work and home.

The commons provides a template for the management of scarce natural resources too. Today, throughout the world – from alpine meadows to Third World irrigation systems – people manage shared resources in this traditional way. When it doesn't work and 'tragedy' takes over, a corporation or government has usually invaded a local setting with its own rules.

This is not a nostalgia trip. The commons really does tap generative energies the corporate market doesn't – in particular, those associated with 'we-thinking' as

opposed to 'me-thinking'. Look at what is happening in the digital realm. Open software such as Linux and the fecund culture of sharing on the World Wide Web go against accepted economic logic. So does the emergence of the Creative Commons and 'copyleft', through which artists and performers release work on the condition it will never be enclosed in a property regime for private gain.

These make no sense in market terms, but they are natural in commons terms. They bespeak a yearning to get off the treadmill of market calculus and into freer and more open air. The commons can't be anachronistic if it is taking root at the cutting-edge of technological change. An ancient future really is emerging. When the same meme takes hold in regard to both the ecosystem and the social system, and in the high-tech realm as well, we might just be on the cusp of something big.

**For more information, visit [www.onthecommons.org](http://www.onthecommons.org)**



# A STEADY STATE ECONOMY



If growth isn't the answer what is? Economist **Herman E Daly** argues that our future depends on a new economic model, one that needs to be defined by the dynamic balance – the steady state – of the natural world upon which it depends

**W**e have lived for 200 years in a growth economy. In this time we have come to believe that all our major economic ills – from unemployment and poverty to overpopulation and even environmental degradation – can be solved by more growth. And if the global economy existed in a void perhaps that would be true. But it does not.

Instead the economy is a subsystem of the finite biosphere that supports it. When the economy's expansion encroaches too much on the surrounding biosphere, we begin to sacrifice natural capital (animals, plants, minerals and fossil fuels) that is worth more than the man-made capital (roads, factories, appliances) added by 'growth'.

The Earth as a whole is approximately a

'steady state'. Neither the surface nor the mass of the earth is growing or shrinking; the inflow of energy to the Earth is equal to the outflow; and material imports from space are roughly equal to exports (both negligible).

In the last 60 years the global population has tripled and the amount of things our population has produced has increased by many times more, increasing our draw on natural capital, as well as on the earth's capacity to deal with the waste produced by all that we produce.

This huge shift from an empty to a full world is truly 'something new under the sun' as historian JR McNeil calls it. But the facts are plain and incontestable: the biosphere that supports us is finite, non-growing, closed and constrained by the laws of thermodynamics. Any subsystem, such as the economy, must at some point cease growing and adapt itself to the dynamic equilibrium – the steady state – of the planet.

For many it is hard to imagine what a steady-state economy would look like. Some think it would mean freezing in the dark under communist tyranny. Others think that huge improvements in technologies, such as energy-efficiency and recycling, are so easy that it will make the adjustment easy.

Regardless of whether it will be hard or easy we have to attempt it because we cannot continue growing, and in fact so-called 'economic' growth already has become uneconomic, increasing environmental costs faster than any production benefits, making us poorer not richer, particularly in high-consumption countries.

Examples abound: tetraethyl lead provided the benefit of reducing engine knock, but at the cost spreading a toxic heavy metal into the biosphere; chlorofluorocarbons gave us a nontoxic propellant and refrigerant, but at the

### Will a steady-state economy end poverty?

Growth cannot increase everyone's relative income. Indeed, growth is like an arms race in which the two sides cancel each other's gains. What is more, if everyone's income increases proportionally then no-one's relative income rises.

How, then, do we deal with poverty? A simple answer is redistribution – for instance by limits to the range of permissible inequality, by a minimum income and, perhaps more controversially, a maximum income.

The question is, what would be a reasonable range of inequality between the wealthiest and the poorest people of the world, one that acknowledges real differences and contributions rather than simply multiplying privilege?

Plato thought society could be content with a factor of four between the richest and poorest. Universities, civil services and the military seem to manage with a factor of 10 to 20. In the corporate sector it is over 500. As a first step, why not try lowering the overall range to a factor of, say, 100?

The private sector would throw up its hands in horror, but remember – in a SSE we are no longer trying to provide massive incentives to stimulate growth. Also, since we are not trying to stimulate growth, we no longer need to spend billions on advertising. Instead of treating advertising as a tax-deductible cost of production we should tax it heavily as a public nuisance. If economists really believe the consumer is sovereign then she should be obeyed rather than cajoled, manipulated, badgered and lied to.

### What sorts of products could I buy?

A steady-state economy will require a move towards longer-lived, more durable goods, ones that make more efficient use of raw materials and energy. This means a shift in manufacturing protocols.

As an example, a population of 1,000 cars that last 10 years will require new production of 100 cars per year. If more durable cars are made to last 20 years then we need new production of only 50 cars per year.

To see the latter as an improvement requires a change in perspective, from emphasising production as a *benefit* to emphasising production as a *cost* of maintenance.

If we can maintain 1,000 cars and the transportation services thereof by replacing only 50 cars per year rather than 100, we are surely better off – the same capital stock yielding the same service with half the throughput previously used to build and maintain the fleet. Yet the idea that production is a maintenance cost to be minimised is strange to most people.

One adaptation in this direction is the service contract that leases the service of equipment (ranging from carpets to copying machines), which the lessor/owner maintains, reclaims and recycles at the end of its useful life.

### Will there still be pensions?

One problem for the SSE is an increase in the average age of the population – more retirees relative to workers. Adjustment may require some tough choices, for instance either higher taxes (though not necessarily on income – see p 42), older retirement age or reduced retirement pensions. Finding an equitable solution is confounded by the fact that for many countries net immigration has become a larger source of population growth than natural increase. Immigration may temporarily ease the age-structure problem, but the steady-state population requires that births plus in-migrants equal deaths plus out-migrants. It is hard to say which is more divisive, birth limits or immigration limits? Many politicians prefer to deny arithmetic and ignore the issue.

cost of creating a hole in the ozone layer, which protects us from too much ultraviolet radiation.

Likewise the consistent finding of economists and psychologists that the correlation between absolute income and happiness extends only up to some threshold of 'sufficiency'. Beyond that point only relative income influences happiness – that is, you will only feel richer if you have more than your neighbours – suggesting that the growth economy is actually providing a net dis-benefit for people on a very profound level.

The notion of a steady state has meant different things at different times in history. To the traditional or classical economist, the steady state takes the biophysical dimensions of the planet – including population and available resources – as given and adapts technology and tastes to these objective conditions.

At a more profound level, the classical view is that man is a creature who must ultimately

adapt to the limits of the Creation of which he is a part. In contrast, the modern, or neoclassical, view is that man the creator will surpass all limits and remake Creation to suit his subjective individualistic preferences, which are considered the root of all value. In the end, economics is religion.

To a neoclassical economist, a steady-state economy would promote proportional growth of man-made capital and population. It takes as its steady state the ratio of this capital to labour, rather than absolute amounts of either. The technology and tastes of humanity are taken as given, and the economy adapts to them by encouraging growth, even in the face of finite biophysical dimensions.

Neoclassical economists consider the concept of sustainability to be a fad and trust that we have come so far with growth that we can keep going *ad infinitum*. But since these same

economists are unable to demonstrate that growth, either in throughput (the energy and materials used to produce goods and services) or GDP (gross domestic product – the total volume of products and services we buy and sell), is making us better off rather than worse off, it is blind arrogance on their part to continue preaching aggregate growth as the solution to our problems.

Accepting that an ever-growing economy is biophysically impossible, it is a good time to address the question of just what a sustainable, steady-state economy (SSE) might look like. **E**

**Herman E Daly is an ecological economist and professor at the School of Public Policy of University of Maryland. For a list of his books and to read some of his papers in-depth, see [www.publicpolicy.umd.edu/facstaff/faculty/Daly.html](http://www.publicpolicy.umd.edu/facstaff/faculty/Daly.html)**

### What about free trade?

'Free trade' as we currently define it would not be feasible for a SSE, since producers in SSE countries would carefully be counting environmental costs in the price of their products ignored by their overseas competitors in growth economies. Any foreign firms not operating in a SSE would 'win' in competition, not because they were more efficient, but simply because they did not pay the cost of sustainability.

Regulated international trade under rules that compensated for these differences (perhaps through trade tariffs) could exist, as could 'free trade' among nations that were equally committed to sustainability and to accurate environmental accounting.

But bigger questions arise, such as how we could get to a situation where international trade occurs when it really needs to, as opposed to when it suits a growth economy? To address these, we need to understand the principles of 'comparative advantage', developed by David Ricardo in 19th century.

For world trade to be fair it must be mutually beneficial to trading nations. Comparative advantage, in which a country chooses to specialise in goods it can produce efficiently and in volume to trade for others goods of equal value – even if it is able to produce these goods domestically – is the reason why Portugal might consider trading wine for British wool even though it could produce both.

This is logical, but like all economic arguments, comparative advantage is based on premises, one of which is that while capital can move between industries within a nation, it cannot move between nations. If capital (as investment) could

move abroad it would have no reason to be content with a mere comparative advantage between nations, but would seek absolute advantage – the absolutely lowest cost of production anywhere.

Now comes the problem. The International Monetary Fund (IMF, which exists to maintain balanced trade between nations) preaches free trade based on comparative advantage, and has done so for a long time. But recently the IMF has also started preaching the gospel of globalisation, which means capital is free to move between countries—exactly what comparative advantage forbids! When confronted by this contradiction, the IMF waves its hands, calls you a xenophobe and changes the subject.

The IMF, World Bank (which bankrolls economic growth internationally) and World Trade Organization (which promotes globalised free trade) contradict themselves in this way because they have chosen to serve the interests of transnational corporations fixated on growth. This allows corporations to play one nation against another. As there is no global government, these organisations are uncontrolled.

In order to return to a system of true comparative advantage, the IMF could limit international investment to keep the world safe for comparative advantage. Specifically, it could promote minimum residence times for foreign investment to stop companies making a quick buck, or they could propose a small tax on all foreign exchange transactions.

### What about jobs?

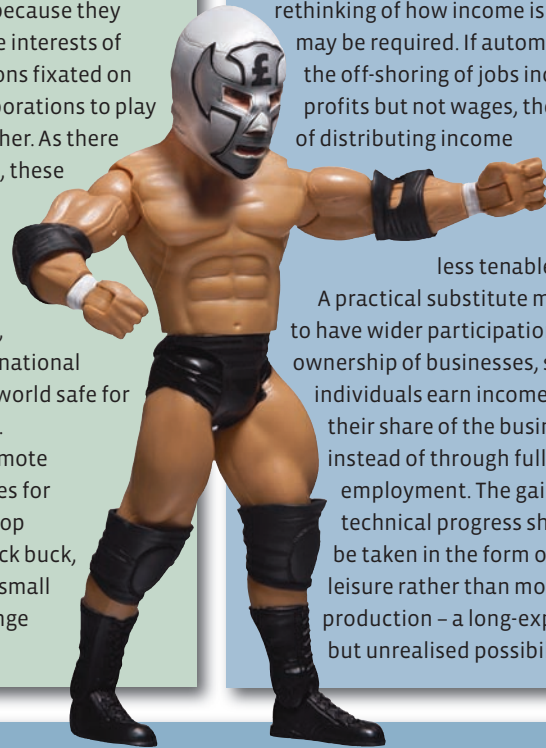
Can a steady-state economy maintain full employment? It's a tough question, but in fairness one must also ask if full employment is achievable in a growth economy driven by free trade, off-shoring practices, easy immigration of cheap labour and adoption of labour-saving technologies.

In a SSE, development in the jobs sector will mean new ways of doing old things: in the extractive sector, oilfield roughnecks may decrease in number while wind-power workers may increase; in the sciences, industrial chemists may be replaced by wildlife ecologists.

Maintenance and repair will also become more important. Being more labour-intensive than new production and relatively protected from off-shoring, these services may provide more employment. But a more radical

rethinking of how income is earned may be required. If automation and the off-shoring of jobs increase profits but not wages, the principle of distributing income purely through jobs becomes less tenable.

A practical substitute may be to have wider participation in the ownership of businesses, so that individuals earn income through their share of the business instead of through full-time employment. The gains from technical progress should also be taken in the form of more leisure rather than more production – a long-expected but unrealised possibility.



### Will taxes have to change?

A government concerned with using natural resources more efficiently would alter what it taxes. Ecological tax reform suggests shifting the tax base away from income earned by workers and business, and on to resources such as energy and natural materials, preferably at the point of 'severance' from the ground, at the

mine-mouth or well-head, for instance.

Taxing resources at their point of severance induces more efficient resource use in production as well as consumption. Taxing what we want less of (depletion and pollution) and ceasing to tax what we want more of (income) would seem reasonable – as the bumper sticker puts it, 'tax bads, not goods'.

Such a shift could be revenue-neutral and gradual. Governments could begin by forgoing x per cent revenue from the worst income tax we have. Simultaneously collect the same amount from the best severance tax we could devise. Next period get rid of the second-worst income tax and substitute the second-best, and so forth until the tax base has shifted.

## Can the economy still grow?

Trying to define sustainability in terms of GDP is problematic because GDP conflates qualitative development (an improvement in the quality of goods and quality of life) with quantitative growth (producing and consuming more goods and services).

The sustainable economy must, at some point, stop growing, but it need not stop developing, and nothing about a steady state precludes qualitative progress. For example, organic farms may supplant factory farms, the proportion of bicycles to Hummers may increase, and professional soccer may attract more fans while NASCAR racing attracts fewer.

There is likewise no reason to limit qualitative improvement in design of products. Indeed, such improvements can, in turn, increase GDP (or whatever measurement of progress that might be brought in to replace it) without placing further strain on limited resources.

Under such circumstances,

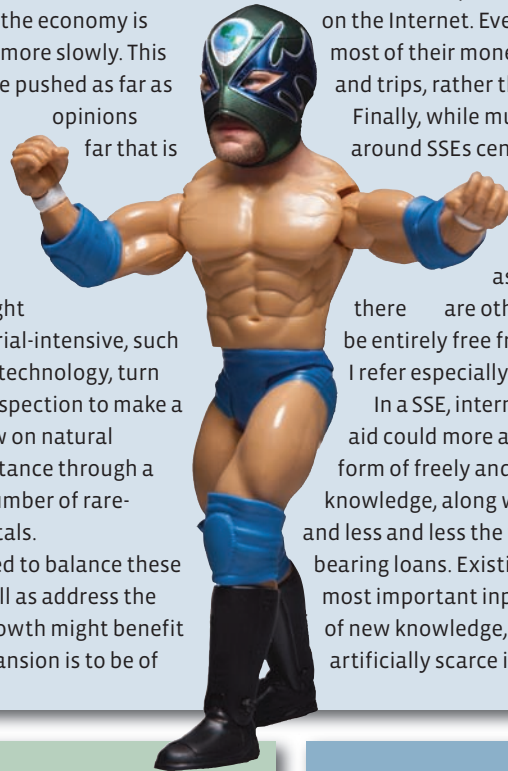
environmentalists would be happy because demand on energy and resources is not growing; economists would be happy because the economy is growing, albeit more slowly. This model should be pushed as far as it will go, but opinions differ on how far that is likely to be. Consider that sectors of the economy generally thought to be less material-intensive, such as information technology, turn out on closer inspection to make a significant draw on natural capital – for instance through a reliance on a number of rare-earth, toxic metals.

A SSE will need to balance these demands as well as address the issue of how growth might benefit the poor. If expansion is to be of

benefit to the poor, it must be comprised of goods the poor need – clothing, shelter and food on the plate, not 10,000 recipes on the Internet. Even the wealthy spend most of their money on cars, houses and trips, rather than intangibles.

Finally, while much of the discussion around SSEs centres on how to distribute consumable products, such as energy or food, there are other goods that should be entirely free from price systems. I refer especially to knowledge.

In a SSE, international development aid could more and more take the form of freely and actively shared knowledge, along with small grants, and less and less the form of interest-bearing loans. Existing knowledge is the most important input to the production of new knowledge, and keeping it artificially scarce is perverse.



## How would banking and finance be structured?

Could a SSE support the enormous superstructure of finance built around future growth expectations? Probably not, since interest rates and growth rates would be low. Investment would be mainly for replacement and qualitative improvement. There would likely be a healthy shrinkage of the enormous financial sector that is precariously balanced atop the real economy and currently threatening to crash.

Additionally, the SSE would benefit from a move away from our fractional-reserve banking system (where only a portion of deposits are held in reserve and the rest loaned out) toward 100 per cent reserve requirements, which would put our money supply back under the control of government rather than the private banking sector.

Under the existing fractional-reserve system, the money supply expands during a boom and contracts during a slump, reinforcing the cyclical 'boom to bust' tendency of the growth economy.

The reserve requirement, something

the Central Bank manipulates anyway, could be raised from current very low levels gradually to 100 per cent.

Banks would make their income by financial intermediation (lending savers' money for them) rather than by lending at interest money they create out of nothing, as well as by service charges on checking accounts and so on. Lending only money that has been saved by someone creates a greater discipline in borrowing and lending and would prevent such debacles as the current 'sub-prime mortgage' crisis.

Would the interest rate in a SSE not fall to zero without growth? Not likely. Because capital would still be scarce there would still be a desire to own goods (such as houses) before you had saved enough to buy them outright, and the value of new goods may still increase without growth in throughput – as a result of qualitative development. Investment in qualitative improvement may yield an increase in value out of which interest could be paid, but the productivity of capital would surely be less without throughput growth, so one would expect lower interest rates in a SSE, though not a zero rate.

## How will we measure how well we are doing?

A SSE should not have a system of national income accounts, GDP, in which nothing is ever subtracted. Ideally, we should have two accounts: one that measures the benefits of physical growth in scale and one that measures the costs of that growth. Our policy should be to stop growing where marginal costs equal marginal benefits. Or if we want to maintain the single national income concept, we should adopt Nobel laureate economist JR Hicks' concept of income, namely the maximum amount that a community can consume in a year and still be able to produce and consume the same amount next year. In other words, any consumption of capital, man-made or natural, must be subtracted in the calculation of income. Note that Hicks' conception of income is sustainable by definition. National accounts in a sustainable economy should follow this model and abandon GDP.

# LESS IS MORE

Don't be afraid of the recession, says **Andrew Simms**, it may just be the lucky break we need to get our heads around a more sane economy and a better quality of life

**H**as Diana died again? You'd think so. Newspapers report a nation facing a future that is 'bleak', 'weak' and full of 'woe' and 'fear'. In language more familiar to the augurs of ancient Rome, the *Daily Telegraph* warns that the 'omens are not good'.

But no, this dismal rain of words falls on the economics pages of the press, triggered by news that Britain's legions of shopaholics aren't shopping quite as much as they are expected to. Looking back at the last festive splurge and seasonal sales, we still spent more than ever before – just not as much more as was hoped for.

It caused a disturbance in the consumer space-time continuum, a ripple big enough for Britain's leading retailers to report dark visions of the 'R' word in the economy's crystal ball. It was the unwanted guest at materialism's party – recession.

The great fear about recession is that, left uncorrected, it can tip over into a full-blown depression. You might ask, 'What's the difference?' Former US President Harry Truman, who first worked as a senator in the long shadow of the 1929 Wall Street crash, said, 'It's a recession when your neighbour loses his job; it's a depression when you lose yours.' Actually there's no fully agreed definition of either. Customarily they involve respectively shorter and longer periods of low-to-negative economic growth and coincide with bad things, such as raised unemployment. That's why commentators get nervous if people stop buying things.

Nothing, though, is straightforward. An odd assortment of sectors supposedly does well during recessions. The pub trade, gambling, artistic endeavour, religion and,

more predictably, pawn shops and the debt trade all thrive on hard times. Economic pundits, of course, have a field day.

But what will happen to the small-but-growing 'ethical economy'? The fates of the organic food sector and fair trade depend, to a large extent, on the prices they charge compared to non-organic and unfairly traded items. In particular, remove the subsidies, obvious and hidden, enjoyed by industrial agriculture and trade built on exploitative labour, and there's no real reason why the ethical economy should fare worse during a recession than any other sector. It could, even, be boosted.

The history of the co-operative movement, rooted in attempts to escape the grim poverty of the Industrial Revolution, is evidence that real economic hardship can foster precisely the kind of ingenuity and enterprise needed

**'Our economy has grown continuously but our sense of satisfaction with life has flatlined'**

to engineer an economy with 'greater social justice as an explicit objective.

For now, though, behind all the doom-laden stories, there is an assumption that the woes of the chainstores are also ours. If we aren't out shopping to realise ourselves fully as human beings then we must be mad, bad or depressed (in fact, the arcane difference between calamity and euphoria in the marketplace example above is a variation in 'sales growth' of only 2.2 per cent).

The conflation of a growing economy with rising wellbeing is hard-wired, both in conventional economic theory and in the minds of policy-makers. To question it remains an economic heresy, punishable by excommunication from the company of the

professional commentariat. But times have changed, and it is wrong.

In the UK alone, while our economy has grown continuously over the last few decades, study after study shows that our sense of satisfaction with life has flatlined. Similar trends can be found in a wide variety of other industrialised countries. More interesting still is the snapshot of what lies behind different lifestyles found in Britain and across Europe. In a unique survey carried out by the New Economics Foundation (NEF), more than 35,000 people reported on both their general, everyday levels of consumption and their levels of wellbeing.

Consumption varied widely. At the high end of the scale, lifestyles, if copied around the world, would need the resources of around seven planets like Earth – so-called 'seven-planet living' – impossible and disastrous even to try. But there were people who also reported very low-impact, 'one-planet living'.

The staggering finding, however, came when consumption was compared to different levels of life satisfaction. There was virtually

no connection at all. You were just as likely to have a good life if you lived using thrift, as if your ecological footprint stomped around the globe all year courtesy of a 747 jumbo jet, or left its tread courtesy of the wheels of a luxury Bentley.

This is because at Britain's stage of economic development, when most of our basic material needs are met, other things determine the rise or fall of wellbeing, such as the quality of family life and our friendships, and the opportunities we have to do things that give us lasting satisfaction, such as learning, being engaged in creative pastimes and meaningful work.

More than this, there is now mounting evidence that getting caught on the hedonic

treadmill, chasing an ever bigger house or smarter car, will undermine our wellbeing. A surprisingly diverse group of people – although mostly excluding economists – is now making that connection.

Imagine overhearing someone talking about the value of ‘natural beauty’, ‘happiness’ and the threat of environmental crises, then decrying the ‘confused economic concept of “competitiveness”’, before finally spelling out the need to ‘dethrone growth’ as the principle objective of the economy.

Who would you think was talking? Your first guess is unlikely to be a former head of the famously hard-nosed Confederation of British Industry. But this is Adair Turner, former CBI head and now the chair of the Government’s new climate change committee, formed to oversee the achievement of reductions in greenhouse gas emissions laid down in a new law. He was writing in a new book entitled *Do Good Lives Have to Cost the Earth?*

In the same pages, Conservative party leader David Cameron writes on the 40th anniversary of a classic speech by Robert Kennedy, in which Kennedy attacked an obsession with economic growth because it measures ‘everything except that which makes life worthwhile’. In which case, as ‘recession’ is merely a description of a particular rate of growth – not anything more – it needn’t necessarily be a bad thing.

Cameron proposes a different measure to growth called General Wellbeing, but goes further to endorse other new indicators, such as NEF’s Happy Planet Index. As a more radical departure from old ways of measuring, the index assesses the efficiency with which scarce natural resources are converted into wellbeing, measured in terms of relative levels of life-expectancy and satisfaction.

With new metrics like this, writes Cameron, we are able ‘to show that people can live long and happy lives without having to consume the Earth’s resources at an inordinate rate.’

As a way of assessing the success or failure of policy, it’s almost impossible to exaggerate the scale of creative departure that using the new index would represent. We would, for example, wave goodbye to the ritual sacrifice on the altar of growth and economic competitiveness of every necessary

environmental and social policy. For once, a deaf ear could be turned to the firms and investors that threaten to relocate overseas at the merest whisper of a new people- or planet-friendly proposal.

For a wealthy country such as the UK, improving on the index – which would mean that we are becoming more environmentally efficient at delivering long, happy lives – would happen, or not, independently of whether shopping helped the economy grow.

We would distinguish between bad, ‘uneconomic growth’, which is represented by building more roads and airports, and good development, seen, for example, in an expanding, decentralised renewable energy sector that creates countless thousands of ‘green-collar’ jobs, helping the environment and contributing to real security.

In Britain today, old economics tells us to work ever longer hours, to increase earnings and contribute to the nation’s economic growth. For many people, however, this

is more likely to erode our satisfaction with life, because it gets in the way of things that really matter.

Philosopher AC Grayling puts the case. He writes that being in hock to ciphers of the good life, such as celebrity lifestyles or faux-rural retreats – what he calls advertising’s ‘mirror of dreams’ – is an obstacle to the real good life. The latter is

found much closer to home.

*Ecologist* columnist, Tom Hodgkinson, Britain’s hardest-working advocate for the cause of idleness, advises that to tackle climate change, possibly the best thing we could do is nothing at all. Not in the sense of keeping on the way we are, but literally to stop. No more shopping, no more upgrading consumer durables. The answer, he writes, is to ‘decommodify our fun... the less time one spends in the lonely aisles of Tesco, the more pleasure comes into your life’. This could also help insulate against the effects of recession.

Less, it seems, really does mean more. But we mustn’t underestimate the problem. We face a financial crisis driven by debt that has allowed us to live beyond our means, and a connected climate crisis driven by the resulting over-consumption. And, we have created a global role-model for developing countries that is crushingly unsustainable.

The poorest people currently lose whichever way they turn. The share of financial benefits from global economic growth actually reaching the poorest people shrank dramatically between the 1980s and 1990s. Nearly half the world’s population live on less than \$2 per day.

For all the rhetoric that growth is needed to reduce poverty, over the course of those two decades, from every \$100 worth of growth, that group took home only some \$4.

Perversely, it means that for the poor to get very slightly less poor, the rich have to get very much richer. It now takes around \$166 worth of global growth to generate a single dollar of poverty reduction for people living below \$1 a day. Already this has taken humanity’s ecological footprint across the threshold whereby Earth’s ecosystems can safely replace what is taken and absorb our wastes without going haywire. And, when global warming hits, the poorest pay first and worst.

More prosaic problems at home, too, are acute. Bankruptcies and home repossessions are both predicted to rise sharply in 2008,



## Less is more

and mortgage defaults by as much as 50 per cent, all pushed by a squeeze on credit and likely interest rate trends.

Wanting to have their cake and eat it, economic commentators are perfectly capable of warning consumers with one breath that spending too much could push them over the edge, while, in another, warning that if they don't spend enough it could push the economy over the edge.

They seem to prefer confusion (which

## 'With the threat of a housing crisis hanging over us, a recession may be a good time for a rethink'

generates the need for pundits) to addressing the fundamental question: for how long can a consumer society defy environmental gravity? How will we kick the over-consumption habit without going cold turkey?

The irony is that we should never have got to this point. The founding economic texts of both political left and right saw through the false promise of conspicuous consumption right from the start. Adam Smith mocked lovers of luxury who 'walk about loaded with a multitude of baubles... some of which may sometimes be of some little use, but all of which might at all times be very well spared, and of which the whole utility is certainly not worth the fatigue of bearing the burden.'

Just under a century later, Marx laid bare the very human dissatisfaction that seemed to drive the spiral of demand for both baubles and palaces, suggesting, 'A house may be large or small; as

long as the neighbouring houses are equally small, it satisfies all social requirement for a dwelling. But let a palace arise beside the little house, and it shrinks the house to a hut.'

So, with a recession creeping, the threat of a housing crisis, negative equity and overstretched credit cards hanging over us, it may be a good time for a rethink.

Wellbeing research shows what really delivers lasting life-satisfaction. Typically, this includes putting time into building good

friendships and family relationships, a positive outlook on life, a sense of community, meaningful work with purpose, having rights and personal freedoms, and less individualistic belief systems that put value on 'doing good' in the wider world.

Reassuringly, cheap and low-carbon good times are everywhere to be had. Remember your legs – take them for a walk in green space – you'll come back fitter, happier and more in touch with the world around you. The same is true with gardening. Then there used to be this satisfying thing people did, known as 'conversation.' In the Second World War, officials warned 'talk is cheap'; in a recession that's a good thing. The more we talk together the better we get at improving

relationships. We can party and play more, while consuming less. We can set up clubs focused on things we

find fascinate us – whether a supper or book club, or a parakeet-appreciation society. If those things wear thin, try again with something else. Projects give us direction and meaning to life.

Our misdirected search for the good life has been a little like Lewis Carroll's epic nonsense-poem *The Hunting of the Snark*, once described as 'the impossible voyage of an improbable crew to find an inconceivable creature'. In it, the baker disappeared (that'll be the influence of supermarkets) and the banker went mad (that'll be the credit, or rather 'debt' crisis).

On a postcard on my colleague's desk is a summary of the wisdom of Bo Derek: 'Whoever said money can't buy happiness simply didn't know where to go shopping'. The only place we have to go shopping, though, is planet Earth, and if we leave all its shelves and storehouses empty and denuded then we have a problem.

Impassable ecological obstacles lie on the path down which we chase shadows of over-consumption in order to deliver our wellbeing. Recession is an invitation to rethink old assumptions. The massively good news is that another way is not only possible, but also, as AC Grayling writes, better, richer and more enduring. Whisper it, but it seems the good times can be green after all. **E**

**Andrew Simms is policy direct of the New Economics Foundation (NEF) and co-editor with Joe Smith of *Do Good Lives Have to Cost the Earth?* (Constable, £7.99). The book includes contributions from Philip Pullman, Kevin McCloud, Hugh Fearnley-Whittingstall, Oliver James, AC Grayling, John Bird, David Cameron, Rosie Boycott, Hilary Benn, Wayne Hemmingway, Tom Hodgkinson and many more**



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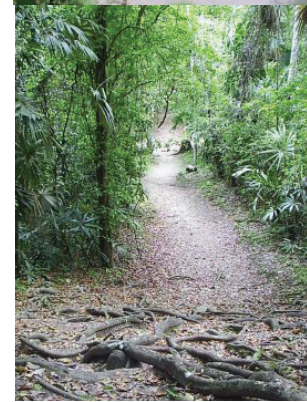
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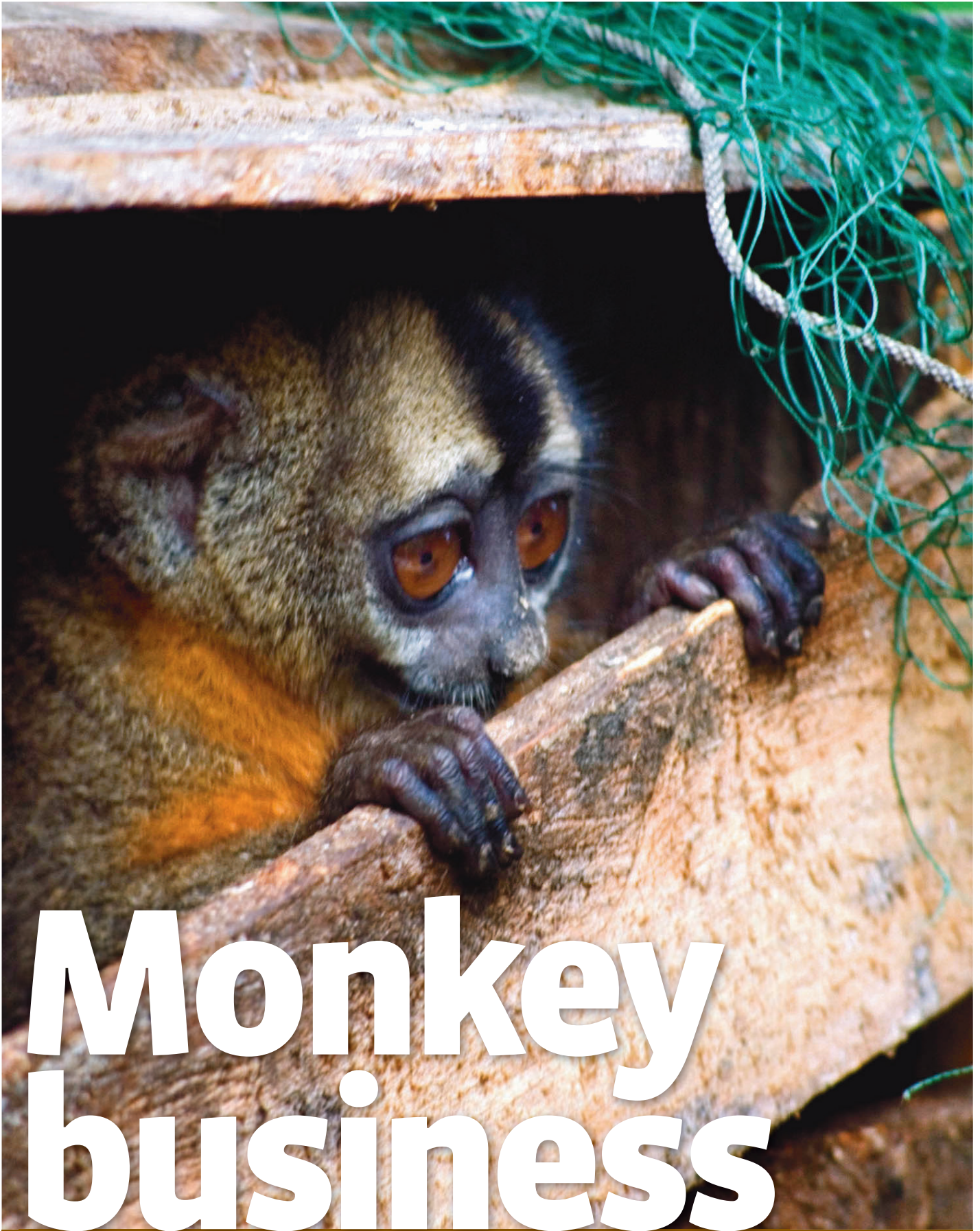
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# Monkey business

**Peter Bunyard** on the battle against malaria, a fallen hero of the Colombian medical establishment and the mysterious fate of thousands of unique primates

**L**eticia, nestling beside the Amazon river, is Colombia's southernmost border town. It has a reputation for being a laid-back, peaceful sort of place, where you can walk casually from one end to the other, and even into Brazil – that is if you can tolerate the heat and high humidity. Increasingly it is becoming a tourist centre for Colombians as well as people from overseas, some of whom arrive by river from Brazil or Peru.

One attraction is the Amacayacu National Park, some 70km upstream, which covers half a million hectares of rainforest. There you can stay and rub shoulders with local indigenous communities, in particular the ubiquitous Tikuna and Yagua. There, if you are patient and prepared to walk away from the river and into the forest, you may see wildlife, including monkeys, the three-toed sloth and a host of birds, all supposedly protected from hunting and the illegal trade in fauna and flora.

In Leticia, in recent years, they have built a new hotel, somewhat luxurious for all its Amazon setting, with an excellent view of the vast, mile-wide river making its inexorable way, several thousand miles downstream, to its sprawling 300-mile-wide mouth in Eastern Brazil. Few, if any, of the Decameron Hotel guests are aware that next door, tucked away within a carefully maintained, exotic tropical garden, is a set of laboratories, with cage upon cage containing a single specimen of the genus *Aotus*, a smallish, decidedly beautiful primate which, on account of its nocturnal habits and its large, brown eyes, is known in the English-speaking world as the owl monkey.

Why are these unusual creatures kept in cages? Unfortunately for the owl monkey, the genetics of its blood and immune system make it the near-perfect model in searching for a vaccine that could prevent humans suffering from infectious diseases such as malaria and tuberculosis. As a result, it has been in demand in laboratories throughout the world, not least in Europe and the United States.

Captive breeding programmes have had limited success and are costly to maintain; for that reason the siting of a laboratory close to the rainforest – so animals can be 'harvested', supposedly in pace with natural reproduction – would seem to make sense. And since the Amazon's indigenous peoples are masters at hunting and tracking primates, it is they who supply the Leticia laboratory, the Amazon wing of FIDIC (the Immunological Foundation of Colombia), with its subjects.

### The scourge of malaria

Shouldn't we be grateful for a God-given creature that can help us find a way to combat such a deadly and debilitating disease as malaria? Each year in Africa more than a million children below the age of five die of this disease – one every 30 seconds. As many as 500 million people are infected worldwide, and the deaths may run into several millions; moreover malaria is spreading as global warming takes hold. According to the World Health Organization (WHO), in countries where malaria is endemic the expenditure on treatment may cost as much as 40 per cent of annual public health expenditure. Who would deny the effort, at whatever cost, to look for a means to prevent it?

The problem is that there has never been a successful malaria vaccine. Indeed, the failure

## 'Shouldn't we be grateful for a creature that can help us find a way to combat deadly malaria?'

to find a cure is an ongoing embarrassment to medical science. Anti-malarial drugs are generally toxic (as the recent withdrawal of Lapdap has shown) and if taken for extended periods of time can damage the liver. Drugs such as Larium (mefloquine) even have dangerous psychological effects. Certainly not an option for young vulnerable children.

Nor is the situation helped by modern travel and the taking of prophylactic doses of anti-malarials for the thousands of tourists visiting mosquito-prone areas. *Plasmodium*, the malaria parasite, quickly evolves resistance and, in a matter of years, one drug has to replace another that has lost its efficacy.

Of course testing of new drugs invariably involves animal experimentation. Few in Colombia have questioned the use of primates in medical research, any more than they do in the US or Europe. But over the past few years, people in Colombia, including primatologists and animals rights activists, have begun to look more closely at the 'monkey business' of using wild animals – indeed, any animals – for research, however philanthropic the aims.

Colombia is a country where malaria, including the virulent *Plasmodium falciparum*, is prevalent, especially in the Pacific coast Chocó region, and the idea of a synthetic vaccine that would help not only Colombians, but also people in other parts of the planet, certainly took the fancy of an ambitious Colombian medical investigator,

Manuel Elkin Patarroyo. He has spent more than 25 years looking for a vaccine that would confer protection against malaria on those at risk from the disease. The advantage he has had over investigators in Europe and the US is that his test organism is native to, and thus readily available in, his part of the world.

Some 20 years ago, after extensive tests on the owl monkey, Patarroyo synthesised his vaccine, SPf66. After trials in Colombia and Tanzania, he claimed it conferred protection from malaria on 40 per cent of the population – a rate of non-infection that was not so different from what might be found in an unvaccinated population, his critics observed.

Despite that, in 1994, in Spain, Patarroyo was awarded the Prince of Asturias Award for Technical and Scientific Research, on which occasion he proclaimed, 'I have marked

the territory and my vaccine is a landmark in the history of parasitology', unblushingly observing that had he not been a Colombian but a scientist from the US or Europe he would by then have received the Nobel Prize. He went on to silence the critics who believed he was in the business of creating a vaccine for his own gain by handing all rights for the use of his SPf66 vaccine over to the WHO.

The WHO put Patarroyo's vaccine to the test in Gambia and Thailand but obtained disappointing results. Its creator responded that the vaccine used – manufactured in the USA – was not the same as he had developed. It was found to contain a higher proportion of the active principal ingredient, but the Colombian Institute of Tropical Medicine got results that were no better using vaccines from Patarroyo's own lab, the Institute of Immunology at the San Juan de Dios Hospital in Bogotá, to carry out epidemiological tests in Vigía del Fuerte in the Chocó.

### How many monkeys?

In justifying his use of the owl monkey in the Leticia lab, Patarroyo states not only that the animals do not suffer, but also he gives them five-star hotel treatment. He says none of the monkeys has died in captivity; moreover that their stay is a relatively short one and after they have served their purpose that they are rehabilitated and set free in the forest.

The actual registry of what happens to the

**Right:** Indigenous hunters are paid £12 for every live monkey they can deliver to scientists searching for a malaria vaccine



**Above:** caged owl monkeys await the next round of tests  
**Left:** furless and barely able to stand, an owl monkey living in 'luxury' in Patarroyo's lab in Leticia, Colombia



Photography: JOANA TORO/CAMBIO

animals in the lab gives the lie to Patarroyo's claim that no animals have died in captivity. Between January and June in 2005, as many as 76 owl monkeys died: 26 from malaria, 15 from pneumonia, nine from malnutrition and four from diarrhoea. Photographs have also come to light showing animals in a deplorable state, with some dead in their cages and others, having lost all their fur, barely able to stand.

As a result of the picture emerging from the Leticia lab, María Constanza Moreno, the legal representative of the federation of groups defending Colombia's natural environment (Federación de Entidades Defensores de Animales y Medio Ambiente de Colombia), has charged Patarroyo with violating Colombia's laws regarding the exploitation of natural resources; with unlicensed experimentation on animals; with failing to ensure the wellbeing of captive animals; with indiscriminate hunting of research specimens; with forest destruction and, finally, with failing to set up, or at least promote, a committee that deals with the ethical use of experimental animals.

In supporting her demand for a court hearing, Moreno refers to a video tape taken in 2003, which shows Peruvian and Brazilian Indians selling monkeys under the cover of night to staff in Patarroyo's Leticia lab. The Indians know full well what they are doing is contrary to the laws of Brazil, Peru and Colombia. They know too, if caught, to deny any connection to Patarroyo. In fact, he has told them he will take no responsibility and

## A view from the inside

My own first contact with the Leticia lab goes back a number of years when, unlike the team of journalists from *Cambio*, I was able to get into the buildings containing the animals. What I saw left an indelible impression of suffering on a scale I had never seen before — cage upon cage, row upon row, of terrified animals, which either leapt to the back of their cages on our approach or lay there, lethargic and obviously sick, presumably from malaria. I also noted holes in the wire mesh covering the windows. It crossed my mind that it was a malaria parasite's paradise.

I have since met one of the vets, who spent a year working in the lab. Two years' ago Lina María Peláez resigned, but not without taking a swipe at Patarroyo for unethical behaviour towards animals and

malpractice in terms of their extraction from the wild, their care in the laboratory and their liberation. In her statement she claims 'the ecological damage for which you, Patarroyo, have been responsible and which you continue to perpetrate, is far greater than admitted... not taking into account the terrible suffering and stress to which the owl monkey is subjected.'

In the wild, *Aotus* spends the daylight hours tucked away in the hollow of a tree, where it lives in its close-knit family group of parents and young. This makes catching owl monkeys all the more traumatic, for those taken and those left behind.

When the hunters find a tree with an owl monkey nest, they clear the forest some 30m around it, a day's work, then clamber some 20m up the trunk of the tree, using vines as useful hand- and foot-holds. The

climber thrusts his hand into the hollow and pulls out a terrified animal, which, after being carried down to the ground, is shoved unceremoniously into a sack. The bagged animal is transported downriver in the dead of night and before dawn is being handed over to the laboratory.

On account of its small size, hunters do not consider *Aotus* worth the effort for meat, unlike the much larger woolly monkey, *Lagothrix*, which has been so over-hunted that it is now on the IUCN (World Conservation Union) list of vulnerable and endangered species. But collecting *Aotus* for medical experiments does have unexpected environmental consequences. Quite apart from anything else, the collection of 1,000 owl monkeys leads to the clearing of 100 hectares of forest.

they must stand on their own. That's why he pays them well, £12 per live animal – not bad money in that part of the world.

Over 25 years of the Leticia lab's existence, thousands of animals have been handed over to Patarroyo, with no clear idea of where they come from nor what happens to them once he has dispensed with them. In October last year, according to *Cambio* (22 November 2007), the Colombian *Newsweek*, a group of 15 Tikuna Indians spent five hours on the river to deliver 120 owl monkeys, all of which had been captured on the Peruvian side of the Amazon.

Meanwhile, Patarroyo has requested authorisation for 1,600 more monkeys so he can continue his research during 2008. The authority concerned, CorpoAmazonía, the council for Colombia's Amazonas department, gave its approval despite knowing of abuses

for the fate of the primates,' said the Association. 'Moreover, Patarroyo does not have any licence from either Brazil or Peru for fomenting the trade in animals from their countries. That is illegal in Colombia and no less internationally. It is regrettable that CorpoAmazonía appears to have been a willing accomplice in such illegal activities. That surely cannot help the situation with regard to Colombia's standing in terms of its international responsibilities.

'We are also concerned that Patarroyo and his group of scientists have freed animals that have been inoculated with Plasmodium. Contact between those animals and local wild populations could lead to the spread of disease. The human population could also be at risk. We have no information on the "freed" animals, how many and where, and

## 'He has failed to produce a vaccine, despite the untold suffering of thousands of owl monkeys'

against animals and the laws of Colombia and its neighbours, not least of which deems it illegal to trade in wild animals. In fact, Colombia has signed up to all the relevant international laws, and the 1964 Declaration of Helsinki clearly states 'sufficient attention must be paid in any scientific investigation to those factors that could prejudice the natural environment. In addition, the wellbeing of any animals used in experiments must be assured.'

Contrary to all that, according to Marcela Ramírez, director of the network for protecting the environment and wildlife, the environmental authorities of Colombia have looked the other way so as not to impede Patarroyo in his ambition to be among the first to produce a viable vaccine for malaria.

'The lack of any institutional regulation of Patarroyo's activities is truly shame-making,' she says. 'He has managed to sell an image of his importance as a medical scientist dedicated to finding an effective malarial vaccine, which finds its way right to the presidential palace.'

Though rather late in the day, the scientific community has begun to react to these fundamental irregularities in the activities of the Leticia lab, and on 1 December 2007, the Colombian Association of Primatology stated its concern that nothing was known of the fate of thousands of monkeys that Patarroyo had used over 25 years of research.

'We have received no data from CorpoAmazonía, the department responsible

CorpoAmazonía refuses to enlighten us.'

The primatologists are also worried that the extraction rate is far higher than the population of *Aotus* can sustain. 'The owl monkey is relatively widely dispersed in its natural environment, living monogamously and therefore in small family groups. It takes at least three years for an animal to reach sexual maturity and that is just not enough to enable the population to recover.'

### A successful vaccine?

Patarroyo has failed, it would seem, to produce a viable vaccine against malaria, despite the untold suffering of the thousands of owl monkeys involved in his trials. Other research establishments appear to be making some headway approaching the problem of malaria from less traditional angles.

Most vaccines work by stimulating the body to produce antibodies against disease. This approach does not work against the malaria parasite once it has invaded liver cells, where it continues to divide with relative impunity and provide a source of infection. The Malaria Vaccine Trials Group in Oxford, based at the university, has focused on generating vaccines that rely on boosting a strong T-cell lymphocyte immune response against the very same liver cells harbouring the parasite. Human trials are ongoing in areas in Africa where malaria is endemic.

Medical research can and should turn away

### Animal testing – why not?

Several published studies show that animal testing can only correctly predict human reactions to drugs in 5-25 per cent of cases. Several drugs deemed safe and effective based on animal testing have later proven ineffective, harmful or lethal to humans. For example:

- Arthritis drug Vioxx appeared safe in animal tests but was withdrawn from the market in 2004 after it caused 140,000 heart attacks and strokes in the US alone.
- Hormone Replacement Therapy lowers the risk of heart disease and stroke in monkeys but significantly increases the risk of these conditions in humans. Further, *The Lancet* estimated in 2003 that over a decade it had caused 20,000 cases of breast cancer in Britain.

There are numerous other similar examples relating to drugs for these and other diseases and complaints, such as cholesterol, diabetes and various heart conditions – even cancer. There are several reasons for this:

- Every species of animal has a unique genetic make-up, so introduced substances produce different reactions from one species to another.
- Animal models cannot demonstrate side-effects, such as headaches, allergic reactions, depression, some blood disorders, skin lesions and many central nervous system effects.
- The range of species used and the variety of conditions under which tests are conducted mean that results can be used to 'prove' almost anything.

from using primates such as the owl monkey and find what they need from in vitro studies of human cells and from human volunteers.

Whether or not Patarroyo ends up in court to face the serious charges against him is still to be decided, but the publicity surrounding the case against a man considered a Colombian superstar may at least lead authorities such as CorpoAmazonía to think again before blithely giving their consent, in the name of progress, to more cruel and unnecessary tests on animals. **E**

**Peter Bunyard is the Ecologist's Science Editor**

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# GREEN PAGES

## THE VINE INTERVENTION

Wine writer Monty  
Waldin's leap of faith

## LIVING OFF A HEDGE FUND

Can foraging feed  
one man for a year?

## RETROFIT REVOLUTION

Transforming houses  
into new eco homes

MEET DIANA BIRD

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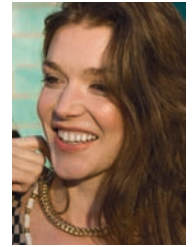




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**62 Living off the land** Is it possible to live for a whole year eating nothing but foraged food? Yes, says **Fergus Drennan** at the start of his 12-month experiment into surviving on the fat – and thin – of the British countryside

**64 Biodynamics on the grapevine** After years writing about wine, **Monty Waldin** finally took the plunge and decided to make his own. Will his organic and biodynamic theories about viticulture take root in his new hilltop vineyard, high in the French Pyrenees?

**68 Going for gold?** Pound for pound, mining for precious metals may be the world's most destructive industry. **Laura Sevier** reports on the truth behind gold's glittering facade and talks to some of the pioneering designers intent on making it green

**70 The retrofit revolution** How environmentally friendly is your house? A growing number of UK owners are transforming theirs into eco homes, saving the planet and thousands of pounds in the process. By **Laura Sevier**



Wherever you see this little bird it'll point you to relevant contacts in our Green Shopping Guide



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What is the greatest cultural shift of the 21st century? According to the recent 'Deeper Luxury' report by WWF it is 'consumers' increasing concerns with environmental and social problems.' We may only be nine years into the 21st century, but this is still an impressive feat for the green movement, which was, not so long ago, a voice in the wilderness.

It certainly indicates that we have become more conscious as shoppers. Co-op's 2007 'Ethical Consumerism' report says that household 'ethical' expenditure has almost doubled in five years, and demand for ethically produced clothing, for instance, has increased by 300 per cent in the last 12 months.

Thanks to the efforts of a determined group of pioneers, there are now green and ethical alternatives to almost everything.

April's Green Pages are packed with people who are taking the initiative, carving their own path and, in doing so, mapping out new ways of doing things – from Diana Bird and her ingenious reward-card scheme for local shops (against a backdrop of encroaching superstores, all with their own reward cards) and jewellers sourcing a cleaner, greener gold, to homeowners transforming old, energy-guzzling houses into super-insulated eco homes. Then there's wine writer Monty Waldin's quest to make his own biodynamic wine on a dry and windy hilltop vineyard in France, and Fergus Drennan, our new foraging columnist, who aims to live off nothing but wild food for a year. If one of the aims of the Green Pages is to inform, the other is to inspire, so that people realise where there's a will, there's a way.

*Laura*

**Laura Sevier, Acting Green Pages Editor**

### ★ READER OFFERS ★

- 74** Win Suma organic wholefoods worth £250
- 75** Win Thermafleece British sheep's wool insulation worth £500
- 80** 10% discount on All How On Earth products
- 81** 15% off the Organic Pharmacy range

# April

BY RACHEL CLODE

## Eco Action

### Spring clean outside

Grab your wellies and head for your nearest river, lake, canal or beach. If the population of England and Wales volunteered for one day, they could clean 694,000km of waterways, longer than the Nile. **Action Earth campaign**, see [www.csv.org.uk](http://www.csv.org.uk)



## Bird of the month

### Wren

The wren is a tiny brown bird, heavier and less slim than the smaller goldcrest. It is dumpy, with a fine bill, quite long legs and toes, short round wings and a short, narrow tail that is sometimes cocked up vertically. It has a loud voice for such a small bird, and is found in deciduous woodland and most UK gardens.

Garden birds such as wrens are well into their nesting period in April. Help them out by leaving areas of your garden wild until they have finished rearing their young. This helps provide valuable grubs and bugs for feeding. April still sees some frosts, so keep feeding the birds until you see some milder weather in May. To

learn more about UK wildlife or to join an organised tour, course or volunteer, visit [www.wildlifetrusts.org](http://www.wildlifetrusts.org)



24-27 April

## Food glorious food

Not already joined the slow food movement? Following the principles of good, clean and fair food, the Real Food Festival at Earl's Court celebrates provenance, sustainability, quality and integrity in food

and food producers.

This four-day trade and consumer event showcases 500 of the most passionate producers, including a number of subsidised small businesses. Handpicked by a committee led by former Slow Food director Lyndon Gee, this will be the biggest farmers' market in the UK to date and includes workshops, a cookery school, demos from the most forward-thinking UK restaurants, tastings and a chef's gallery. If you can't get enough of all that's on offer during the day, restaurants around London will be serving menus specially prepared for the festival. See [www.realfoodfestival.co.uk](http://www.realfoodfestival.co.uk)



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Image: GETTY IMAGES

19 April

## World Disarmament Campaign AGM and Spring Conference

A week before the anniversary of the 1986 Chernobyl disaster, Dr Frank Barnaby, physicist and nuclear issues consultant with the Oxford Research Group, will be speaking in London on nuclear power and nuclear proliferation. For information, email [editor.worlddisarm@ntlworld.com](mailto:editor.worlddisarm@ntlworld.com)

To find out more about those affected by the events in Chernobyl, visit [www.chernobyl.info](http://www.chernobyl.info)

30 April  
Beltane

Traditionally marking the beginning of the summer, Beltane has been celebrated for thousands of years in the UK and Europe, when fires were lit to burn winter bedding and floor coverings. Still a major date in Wiccan and Pagan calendars, why not have your own Beltane bonfire to get rid of your garden waste, and celebrate life and the changing season with a Beltane cake – visit [www.originalrecipes.com/node/16456](http://www.originalrecipes.com/node/16456)



## Pick of the month Rosehip and hibiscus tea

Hampstead Tea and Coffee has been working with the world's first biodynamic tea estate – Makaibari, in Kurseong, the Land of the White Orchid, in Darjeeling, owned by Rajah Banerjee – for more than 20 years. This revitalising tea has a lovely rich red colour and a refreshingly fruity taste. Packed with vitamin C to boost your immune system, it's also biodynamic, Fairtrade and organic. Visit [www.hampsteadtea.com](http://www.hampsteadtea.com) for details of stockists.



In season



**21-27 April**  
**Real Nappy Week**

Thanks to many campaigns and small companies setting up around the UK, organic cotton nappies are now widely available. You can also choose Fairtrade, as with the Little Beetle organic cotton velour nappy. Each purchase helps parents in Kolkata, India, send their kids to school. For more information, see [www.madeinwater.co.uk](http://www.madeinwater.co.uk)



**Spring wild flower**

Wood anemone  
*Anemone Nemerosa*  
[www.wildaboutbritain.co.uk](http://www.wildaboutbritain.co.uk)



**11 April**  
**Straw-bale building**

I'll huff and I'll puff and I'll... make an eco building from straw bales. Learn new skills with this project, which aims to leave a permanent structure on-site in Buckinghamshire, while teaching those involved about the environmental and practical benefits of construction using straw bales. See [www.greenguide.co.uk](http://www.greenguide.co.uk) and click on events, or for further courses from leading UK straw-bale builder Chug Tubby, see [www.strawbale-building.co.uk](http://www.strawbale-building.co.uk)



**April**

From charity daffodil walks to lambing, events with a focus on spring are taking place throughout April at some of the UK's most beautiful parks, woodlands and historical houses. See [www.nationaltrust.org.uk](http://www.nationaltrust.org.uk) and click on 'events' to discover what's happening in your region.

**Bluebell Safari**

In the UK there are two common species of bluebell. The familiar native bluebell, *Hyacinthoides non-scripta*, is common in woodlands, hedges and shady places. Nearly half the world's population of this species is found here. The Spanish *Hyacinthoides hispanica* can be found in many urban gardens and parks. To discover your nearest blue carpet, visit [www.woodland-trust.org.uk/bluebells](http://www.woodland-trust.org.uk/bluebells)

Email: [rachel@thecologist.org](mailto:rachel@thecologist.org) with upcoming events for In Season

**Food in season**

- Broccoli (purple sprouting)
- Brussels sprouts
- Carrot
- Chervil
- Chicory
- Coriander
- Dandelion
- Garlic
- Kale
- Lettuce
- Morel mushrooms
- Parsley
- Parsnip
- Potato
- Radish
- Rhubarb
- Rocket
- Rosemary
- Sorrel
- Spinach
- Spring cabbage
- Spring cauliflower
- Spring greens
- Spring onion
- Swede
- Tarragon
- Watercress



**Above:** morels are prized as a great delicacy



**Right:** spring onions can be used in salads or stir-fries

**Some ways to cook mushrooms**

- Wipe mushrooms clean (they absorb water when washed.)
- Heat olive oil, add mushrooms, onion, garlic, vegetable and white wine stock, and rice. Grate fresh nutmeg, add coarsely chopped chervil and serve with parmesan and black pepper.
- Stuff large flat mushrooms by removing stalk and chopping with garlic, fresh herbs, parmesan and breadcrumbs. Stuff back into mushroom, drizzle with olive oil and bake for 15 minutes.



## LOCAL HERO

# Diana Bird: Thin end of the Wedge

The woman behind Wedge, a loyalty card for local shops, is restoring a sense of community to the high street. **Jeremy Smith** talks to a shopping counter revolutionary

**D**iana Bird's husband used to make her paranoid. Being an American who is happy to speak to anybody, whether he knows them or not, he would make her terribly worried when they were out on the streets together. He didn't listen when she tried to tell him that you just couldn't talk to people you didn't know in the UK, that they'd think you were mad.

'There was a woman in our local newsagent who never said hello to us,' she explains. 'One day my husband just snapped. "That's it," he said, "I've had enough," and stormed into the shop, went up to the counter, smiled and said simply: "How are you?"'

What happened? The woman smiled back and replied that she was well. So began the path to a friendship that has lasted ever since.

The experience changed the way Diana saw her neighbourhood. At the time she was living in Marylebone, central London. She had just given birth to her son and was sat at home in her flat all day long with her newborn, profoundly aware that she didn't know anyone around her.

'I would end up going out shopping,' she explains. 'Three times a day. Just popping out to buy one more apple or half a loaf of bread. It wasn't that I had no friends, rather that I was desperate to make connections.'

And there the story might have

ended, except that she didn't only talk to the shopkeepers – she talked to her father too.

#### A Bird in the hand

Diana's father is John Bird, founder of *The Big Issue* and, until he pulled out recently, independent candidate for London Mayor. Diana grew up in a household where both parents were what she calls 'high-end protesters'. Her childhood was spent giving out copies of the *Socialist Worker*, filling envelopes and going on CNL marches.

She is clearly marked by this experience, although she doesn't feel that today's generation is as geared up to protest as people were in the Seventies. She reckons the



“

For me it's not about telling people what they're doing wrong but about going 'Why don't you try this?'

overwhelming volume of information we receive through our media just makes people depressed, tired and, as a result, apathetic.

'I don't think you change people by telling them how bad things are,' she explains. 'For me it's not about telling people what they are doing is wrong, but about going, "Oh look, why don't you try this?"'

Which, after seeking advice from her father, is exactly what she did.

'Dad looks at social problems and tries to find the business angle,' Diana says. 'He tries to create something sustainable that means you aren't constantly asking people for tonnes of money. It means you can make your own decisions about how something

will run.' And Diana's 'something' is a loyalty card... for local shops. It's called Wedge.

The idea is simple. We all know about supermarket loyalty cards, having been asked every time we get to the till whether we have one. They log every facet of our shopping behaviour, amassing information on what we like to buy, when and how often, then offering us vouchers and discounts tailored to these patterns. These cards amount to one of the most staggering pieces of social analysis and consumer manipulation ever achieved.

What Wedge does is somewhat different. To start with it doesn't store any information. Rather it works more like a membership card, enabling any

shopper who has one to obtain various discounts or benefits when shopping in participating stores: 10 per cent off books if you spend £20, for example, or a free biscuit if you buy a coffee.

Anyone who wants a Wedge card can buy one for £10 from any outlet signed up to the scheme, or by applying through the website ([www.wedgocard.co.uk](http://www.wedgocard.co.uk)). This money is then reinvested in keeping the scheme running, with a proportion going to charities and groups working to protect local communities and help them develop along sustainable lines.

If you want to see which shops in your area are signed up to Wedge, simply visit the website and type in your postcode. You can also use it to

find a shop specialising in a certain field. Indeed, what is remarkable is the range of different shops involved in the scheme. It's not just archetypal green, worthy, fair trade, organic shops; nor is it only the sort of high-end delicatessens and specialist cheese shops that many people associate with the recent rekindling of interest in local shopping – the sort that get on to Rick Stein and Jamie Oliver programmes.

'We're really obsessed with being inclusive and providing access to all local shops,' explains Diana. 'There is this "posh" preconception, and sure lots of the shops in the scheme are like that – in many ways it's as well to do places like Marylebone, which are on the frontline, because it's there that Starbucks, Tesco and Sainsbury's really want to be, because that's where they see the money. By way of contrast, though, we also have 120 outlets signed up in relatively impoverished areas of London, such as Hackney and Tower Hamlets.'

In fact, the only sorts of shops not eligible to join are those selling pornography, profiting from gambling or selling illicit material. That, and chains. Anyone with more than nine outlets is turned away.

'If you have 20 shops you've got access to all the things you need,' Diana explains. 'Research,

marketing, PR and so on.' All-organic supermarket Fresh & Wild isn't allowed, for example. 'They are owned by [US food giant] Whole Foods Market,' she says. 'They've got massive corporate power behind them – they don't need our help.'

**Helping each other**

The Wedge scheme has only been running for a year in London, but already has more than 500 local shops signed up to take part. By June next year it plans to have 1,000 at least. Meanwhile a way is being developed to offer other communities the opportunity to run Wedge in their own areas as a kind of franchise – 'like an Ann Summers for local shopping', says Diana with a laugh.

Wedge has also had considerable success persuading big employers within a community to buy a large number of cards, which are then issued to staff and visitors, allowing the company to give something back. One business centre that operates across London, for example, bought 1,000 cards. In so doing it encouraged its staff and clients to use local shops as well as creating goodwill, as Wedge had also had the cards branded with the business centre's name.

The promotional aspect of Wedge is absolutely central to its mission; the sort of shops it works with are more

often than not those that do not have the capacity to promote themselves. They don't have the same resources as supermarkets and other large chains to advertise their brand and goods, nor do they sell the sort of volumes that enable them to engage in such anti-competitive practices as using loss-leaders (deliberately selling at a loss popular products whose price people know, such as coffee and baked beans, in order to draw people into the store and consequently spend on other, non-discounted products).

Likewise they don't have the time, energy or resources to analyse and respond to customer shopping behaviour. Whereas a local store will arrange its products for aesthetic reasons or to fit on the shelves, everything in a supermarket is carefully positioned to respond to consumer shopping patterns: placed at a certain height on a shelf; at a certain distance along an aisle; at a certain point in the supermarket – all in order to maximise its chances of attracting potential customers. For example, it makes no practical sense to fill the entrance of a supermarket with the fresh, crushable produce you put into your trolley first, but it draws us in more than rows of heavy tins would. What's more, Diana explains, food is often cheaper in local shops; they just aren't able to emblazon bus



We have 120 outlets signed up in relatively poor areas, such as Hackney and Tower Hamlets



Photography: DEE RAWADAN

stops with their price claims. So using its website as a central promotional hub, Wedge gives all the shops it supports, however small, an online presence and a chance to fight back. It also helps them get more savvy.

'The idea is that we are linking these shops together,' explains Diana, 'so they're promoting each other while we're promoting them. If, for example, a bookshop is signed up and someone goes to buy a book there, and when they leave they notice that the café next door is also a member, and they go in and buy a croissant and a coffee, then the bookshop has promoted the café. It is a form of cross-promotion and support that relies upon and strengthens the ties of community.'

In our increasingly transient society, this matters. Our communities are no longer focused around the church or the pub. More often they are formed at work and change as often as we, or our co-workers, change jobs. As a result we lose an idea of what a community can be, or what support it can offer. Some massive supermarket isn't a place to stop and chat to people; it's a place to get your shopping done and go home. If your experience of shopping is getting in your car and driving to a giant retail park where there aren't even pavements to stroll along, you will see shopping a chore to be done as fast as possible, rather than the form of social interaction traditionally offered by the marketplace. No wonder it has been reported that one in four people in this country doesn't have a conversation with anyone else during an average day. We have become more and more insular – like Diana used to be – more scared of the people around us, more alone. By connecting us back to our wider communities, Wedge works to change this.

'For starters, it's made me feel much safer,' Diana says. 'Like pretty much all Londoners, I've spent much of my time imagining a murderer lives next door and that I've got to lock everything up. But once I got to know the people who lived and worked around me I felt so much more at ease. And a huge benefit for



me is that people talk to my son, who is two years old, and know him. I feel now that if he ran off down the street someone might stop him. It's broken down those barriers of isolation that most people feel in a big city.'

Most importantly of all, it's not just about keeping money in the local shopper's pocket, but keeping it in the local community. It's not often appreciated just how important local shops are to the survival and regeneration of an area. If you spend your money in Tesco, Asda, Boots or any other chain owned not by an independent shopkeeper but by distant and absent shareholders, then a lot of what you spend ends up in their pockets. You may spend your money in Mile End, but it ends up being traded on the Square Mile. If you spend your money with local shopkeepers, however, they are more likely to spend it in turn in other local shops, to pay their local staff with it and use it to support local services from window cleaners to repair men and so on. Your money circulates in the community, helping it prosper.

'It's a choice we make,' says Diana. 'If we only shop in supermarkets, we will end up with a certain type of community and a certain type of

landscape. In the end we'll be living in a parking lot surrounding by a giant retail park.'

As she talks, something of her father's activist zeal comes through. 'We see ourselves as a kind of movement,' she says. 'We'd like to grow as far as we can; get as many shops as we can involved; support them as much as we can; promote them; shout about them. We need as many people as we can to join our revolution.' **E**



If we only shop in supermarkets, in the end we'll be living in a parking lot surrounded by a giant retail park

### Where can I buy a Wedge Card?

Wedge traders sell cards for £10 in their shops. Alternatively, buy online – £5 from the sale goes direct to a chosen local charity.

### Where can I use the card?

Wedge Cards can currently be used only in London, though there are plans to expand. Use the online database at [www.wedgocard.co.uk](http://www.wedgocard.co.uk) to find out which businesses accept Wedge in your area.

### How can I win a Wedge card?

The *Ecologist* has 30 cards to give away to readers living in London. Send an email to [petronella@wedgocard.co.uk](mailto:petronella@wedgocard.co.uk), with 'Ecologist reader offer' in the subject box. Please include your name, address and a contact number. The first 30 readers to respond will receive a free Wedge card.



# A foraging fool in search of fool's gold?

Is it possible to live off foraged food alone? **Fergus Drennan** thinks so and aims to prove it. In the first of his monthly columns he explains why, from April 1st, he will be eating nothing but wild food – for an entire year...



**F**oraging – what's all the fuss about? What exactly is it anyway? Who does it and why? I'm one of those clueless fools who

thinks that answers can be found in books, so indulge me for a second while I forage about in my *Chambers English Dictionary*:

**Forage:** n. fodder, or food for horses and cattle; provisions; the act of foraging; v. intr. to go about and forcibly carry off food for horses and cattle; to rummage about for what one wants; v. tr. to plunder.

Mmm... I'd certainly never plunder. Foraging isn't about detrimentally exploiting the environment; as far as I'm concerned it has more to do with establishing relationships of sustainable and interactive responsiveness within it, relations based upon respect and appreciation.

Besides, I don't have a horse.

In actual fact, before becoming consciously aware that what I did was foraging, I had considered the concept as being applicable only to the animal kingdom – a term focusing the research activities of behavioural ecologists – or if it had any bearing on the human world at all, as a word used by anthropologists to describe the food acquisition methods of our early hominid, Stone Age and Mesolithic ancestors. Perhaps the spectre of peak oil, social collapse, anarchy and chaos is a mirror that will reflect our past prehistoric behaviours as an inevitable model for the coming centuries, in which the atavistic suddenly becomes profoundly futuristic and, like our hunter-gatherer ancestors, we either forage or die. I hope not!

As for wild food, that's certainly an ambiguous term and a dictionary isn't such a bad place to start for that, either. Just imagine: had the food-procuring fiends employed by supermarkets actually bothered to look the term up before debasing its meaning in a drunken orgy of inappropriate prefixing – wild salad mix, wild strawberry yoghurt, wild rocket, wild berry cheesecake, wild mushroom quiche, wild bean coffee – then visiting aliens and foreigners would be left with the misconception that wild means grown in polytunnels dotted about the globe.

However one defines these terms, there is clearly a resurgent interest in foraging for wild food, which is all the rage once again. Books, magazine and newspaper articles abound,

as well as numerous wild food and foraging-themed TV programmes. Stick-rubbing Ray Mears seems to be lurking around every corner with his friction fires and pit-cooked wildings, while Hugh Fearnley-Whittingstall is nothing if not ubiquitous. I admire them, and any hint of weariness comes not from a sense that they're overexposed or the fact that friends are repeatedly telling me they saw Hugh do this and Hugh do that; rather it's the horribly vicarious Neil Postmanesque *Amusing Ourselves To Death* nature of the whole thing.

We are sold short by such TV-mediated experience, which, unless hands-on, is really no experience at all. It can never truly connect us with the deeper, more ecologically and existentially based wellsprings from which foraging's current popularity flows. It merely gives us short-lived, tokenistic environmental 'knowledge'.

Yet to have any meaning or relevance at all, foraging is something that must be practiced.

The underlying assumption here is that foraging is a 'green' activity and therefore I must be Mr Green and environmental. No, picking weeds doesn't necessarily make you green – not unless you eat excessive amounts of chlorophyll-rich leaf curd (leaf curd, the protein extracted from leaves, is my latest Patrick Whitefield-inspired obsession; p260 *The Earth Care Manual*) – but it does help you see in green. Foraging could play a small part in a low-carbon society, possibly contributing to the transition foods of transition towns and small-scale Permaculture communities. On



## In season

- Birch and lime sap
- Winter cress
- Chickweed
- Hairy bittercress
- Scurvy grass
- Sea purslane
- Japanese knotweed
- Wild garlic
- Alexanders
- Charlock
- Honesty
- Reed mace
- Nettles
- Cleavers
- Wood sorrel
- Common sorrel
- Dandelion
- Cow parsley
- Shepherd's purse
- Common mallow
- Hedge mustard
- Dittander
- Garlic mustard
- Gorse flowers
- Burdock root
- Evening primrose root
- Wrack-type seaweeds
- Jelly-ear fungus

a larger scale it may be completely unsustainable, but that has yet to be proved. Could it be proved?

### The wild food challenge

With these considerations in mind, you can imagine my thoughts on reading the following statement by Susan Campbell, who was writing for the 2004 Oxford Symposium on Food and Cookery, whose theme was 'Wild Food': 'I have yet to meet,' she claims, 'anyone who could convince me that modern man could subsist on wild food alone, legally or illegally, the year round in a northern climate.'

Well, perhaps she has yet to meet any fist-waving, this-land-is-ours, back-to-nature fools such as myself. A fool who, both ignoring the collective implications behind the phrase 'modern man' and, simultaneously, strangely stimulated by her reference to illegality, would take her statement as a personal challenge. Not, of course, that I would wish to indulge in any gratuitously subversive behaviour, paying mere lip service to the incumbent permissions demanded by an over-baked reality of private ownership. Although, when you think about the way in which a local, seasonal and invigoratingly nutritious wild food diet could counter many of the collective ills bound up within the 'ill' of 'ill-egality', and about foraging's inherently radical and egalitarian potential, subversion clearly does have a place.

Indeed, having a place, a profoundly rooted and intimate sense of connection to one's local environment, a genuine stake and

sense of belonging, is one of foraging's greatest gifts, informing one's desire to nurture, value and protect as part of the reciprocal challenge of consciously interdependent living. Foraging, for me, increasingly subverts all notions of the ordinary and commonplace, revealing a magical world of simplistic complexity and natural inspiration. But, can it ultimately subvert the long-standing habitual behaviours and addiction to convenience and ease that are so often my defaults?

With my fool's credentials laid bare, then, it is with playful aptness that I've decided to embrace Susan Campbell's wild food challenge, by endeavouring to eat – or 'subsist', as she describes it – on nothing but 100 per cent foraged food from April Fool's Day 2008 until 31 March 2009. It won't be easy, and over the coming year I'll be reporting back with updates (as well as writing more practically about wild food in general). Will it be possible, sustainable and provide information that can be extrapolated to larger groups? Will I waste away or merely survive, merely subsist? Back to my pedantic dictionary-waving antics again. **Subsist:** *to hold out, to stand fast.* **Subsistence:** *real being.*

Real being? Awakening? Foraging Buddahood or perhaps just fool's gold? Enough. I must go and forcibly carry off some food for this wild food hobbyhorse of mine. **E**

**Fergus Drennan writes about, does research into, runs courses on and generally, lives and breathes wild food**

“  
Foraging subverts all notions of the ordinary, revealing a magical world of complexity and natural inspiration

**Common sorrel:**  
The leaves of this member of the dock family can make a good addition to salads and soups

## Reading

- Wild Food* (2007) by Ray Mears and Gordon Hillman.
- Wild Food* (2007) by Roger Phillips.



## Contact me

For information on foraging or to get in touch, visit my website [www.wildmanwildfood.co.uk](http://www.wildmanwildfood.co.uk)

Making the transition from wine writer to viticulturist was a leap of faith for **Monty Waldin**. What could he expect from his new hilltop vineyard in the Pyrénées? In soil steeped in centuries of winemaking tradition, would his organic and biodynamic theories take root?

# Grape expectations



© Monty Waldin

**B**y the time I took the plunge myself I had lost count of the number of times friends – and friends of friends – had asked me about getting their own vineyards. I'm not saying the way I did it will appeal to everyone: renting rather than buying a vineyard, and often sacrificing profit to try to farm with as much environmental integrity as I could manage. What I will say, though, is that if you follow some basic rules you'll minimise your risks in what is, after all – like all types of farming – an inherently risky occupation.

The first thing I had to consider when contemplating swapping a life spent commentating on other peoples' produce for a life making my own was where did I want to make my wine?

I've been lucky enough through my job as a freelance wine writer to be paid to travel to and scrutinise most of the world's wine regions, and just as you would check out the area in which your potential dream home is located, there really is no substitute for spending as much time as you can immersing yourself in the local wine culture of whichever region has taken your fancy. Will



If you follow some basic rules you'll minimise your risks in what is, after all, an inherently risky occupation

you like the food, the climate and people? Will you like the local wines? And with vineyards in places as esoteric as Bolivia, Thailand, India and even Yorkshire, the world really is your vinous oyster.

In my case, it was an interview I had conducted with an English winemaker – Robert 'Bertie' Eden, who had a biggish organic winemaking operation in the Languedoc region – that helped me zone in on Mediterranean France.

Bertie had searched all over the world for his vineyards and, having crunched the numbers, he told me that Mediterranean France was the

place for a winemaker to be.

‘This was the most interesting and, per square metre, the cheapest place in the world to buy vines,’ he explained. ‘The wine can legitimately be labelled “made in France”, which still has immense cachet, whatever the critics say. If you are looking to invest in vineyards you must be looking pretty long-term; and if you’re looking long-term, France is a pretty safe bet. I mean, the fields I walk across were first planted as vineyards by the Romans.’

This all made sense to me. As well as writing about wine I’ve also lived and worked on vineyards in a few of the world’s wine regions: Bordeaux, California, Chile, Argentina, Tuscany and Germany. All of these I ruled out for one reason or another, such as lack of US resident’s status (California), distance (Chile), too strong a black economy (Italy, Argentina) and my desire to make red wine first and foremost (most German wine is white).

In Bordeaux’s case, apart from the very high prices of vineyards (tens of millions of pounds for the very best châteaux), the climate was a big negative. This is because it rains more in Bordeaux than in the drier, hotter Mediterranean – and rain and humidity can bring the type of vine diseases that make the organic and biodynamic winegrowing I favour frustratingly difficult. Why buy a house in an area where your windows are liable to be broken every night by street kids when you can buy one in a quiet neighbourhood instead?

#### **In vino veritas**

It was all very well having identified Mediterranean France as the place in which I wanted to make my own wine, but I now had to find the exact vineyard in which to do it – not as easy as it sounds in area with so many thousands to choose from.

These vineyards are mostly found in the Languedoc sub-region, which runs roughly from Provence as far

as Narbonne. It was the smaller and less well-known Roussillon region, which runs from Narbonne to the Pyrénées mountains, that attracted my attention, however.

While researching a book on biodynamic wines I had come across Eric Laguerre, a grower who was making his own wines as well as renting out some of his vineyards to people I knew in the English wine trade. Eric’s wines had come out very close to the top in a blind tasting I did of more than 100 Roussillon wines, and so I arranged to meet him at his cellar in the village of St-Martin-de-Fenouillet.

The visit went so well that when, a couple of years later, I was ready to make wine myself, I asked Eric if he would rent some vineyards to me.

Sat high in the hills between the Corbières and Pyrénées mountains, approximately 45 minutes’ drive from Perpignan, the vines in the area around St-Martin-de-Fenouillet ripen much more slowly than those nearer the Mediterranean. Slow ripening is one factor that helps make the kind of smooth but fresh-tasting and not too alcoholic red wines I like to drink.

Eric was used to being jolted around as we drove between rows of vines in an old pick-up truck built like a Second World War tank, and he found it amusing that I should even try to take written notes as I was being hurled around the cab.

He revealed that he’d taken over the family vineyards after his father died a few years before and that it had been very easy to make the switch to organics.

‘We don’t really need chemical fungicides here as it’s so windy,’ he explained, referring to the *tramontana*, a mountain wind that blows almost daily. ‘The *tramontana* has a drying effect on the vines meaning that if it does rain there’s no time for fungus diseases such as rot or mildew to take hold and damage the grapes. All the humidity the fungal diseases need in order to



Slow ripening is one factor that helps make the kind of smooth but fresh-tasting and not too alcoholic reds I like to drink





The vineyard is on a mountain. It's dry, steep and windy – but the grapes will be of good quality

reproduce is dried by the wind.'

There was, however, a downside: low yields. The wind that dried the grapes of disease had a drying effect on the grapes themselves, meaning they'd be small in size and each would thus produce only a small amount of precious juice.

The amount of wine that may be produced from any given vineyard is strictly controlled by French wine law. Although the law said I could potentially make over 3,600 bottles of wine per acre of vineyard, Eric explained that I'd actually be lucky to get one-third of this amount: 90 hectolitres per hectare is allowed by law; I would be lucky to get 30 hl/ha (100 litres = one hectolitre).

'The vineyard I'll rent you is on a mountain,' Eric said. 'It's dry, steep and windy. The vines really have to struggle, and when vines struggle they produce few grapes – but at least they'll be of good quality.'

The vines planted in this particular vineyard produced a red wine grape known as Carignan, which was popular after the Second World War, when times were tough. On lower-lying and thus more fertile sites than Eric's – and with a bit of help from powerful chemical fertilisers – it gave huge yields of grapes.

'The trouble with Carignan,' said Eric, 'is if you force it into producing lots of grapes, the grapes won't be properly ripe and you'll end up with a nasty red wine tasting of unripe bananas and burnt rubber.'

This was one reason why Carignan had such a bad reputation. It was despised by many modern wine writers and, due to the burgeoning wine lake, the authorities had even begun paying winegrowers to rip it up and plant 'better' – i.e. lower-yielding – grape varieties (such as Syrah and Grenache, and even Merlot or Cabernet Sauvignon).

It is only recently that Carignan's reputation has swung full circle, the general consensus being that it is a good grape if farmed correctly – not forced to over-produce and grown

on the kind of mountain sites – like mine – where it doesn't have the opportunity to do so.

### In a chemical world

As every good winegrower will tell you, vines will over-produce if forced to suck up chemical fertilisers. These salts are designed to dissolve in the soil when it rains; the vines suck them up and end up growing too quickly – as though they have been given a whole year's worth of food in just one or two days. Like couch potatoes, they become more prone to disease. The cell walls in the grape skins or vine leaves are simply not strong enough to prevent attack from fungus disease spores.

So my first challenge as a would-be biodynamic winegrower was to remember the words of the founder of biodynamics, Rudolf Steiner (of Steiner-Waldorf schools fame): putting a tonne of fertiliser on the land may give us one tonne of food, but as that food would essentially have come from inert or lifeless fertiliser, the food – or in my case wine – would lack vitality or soul.

Steiner's suggestion was to feed the soil with compost, which, rather than being inert, is full of life, from worms to billions of beneficial microbes. This soil would then feed the vines and make for more vibrant and complex-tasting wines.

It takes several months for a pile of manure, waste vegetation and used grape skins and stems to rot into good compost, however, and I didn't have that kind of time. Besides, my partner Silvana (a professional auditor) had made it quite clear that I didn't have the budget to buy and keep a small herd of cows for the manure. So I purchased around 15 tonnes of municipal compost, recycled from green municipal waste, mainly lawn clippings from public parks and tree prunings from roadsides. As biodynamics is all about recycling dead stuff so as to bring life back to the soil this didn't put me off.

Look out for the new six-part television series *Château Monty* screening on Channel Four this autumn.

©Monty Waldin

One of Eric's conditions for renting me the vineyard was that I maintained its official organic status, which implicitly ruled out non-organic compost. The compost I bought was not only certified organic, but also contained exactly the right amount of carbon, the food of choice for the kind of soil micro-organisms I wanted to encourage.

### The biodynamic man

What it didn't contain, however, were the six so-called 'biodynamic compost preparations', made from yarrow, chamomile and dandelion flowers, whole stinging nettles minus the roots, oak bark and a liquid extract made from crushed valerian flowers. A few teaspoons of this is supposed to be placed in the compost as the piles are laid out.

They carry what biodynamic growers call 'life forces' into the compost. In other words, as well as providing physical sustenance and life for the soil – the carbon, the worms, the microbes – compost should also promote invisible 'life forces'. These are said to help plants grow more strongly, allowing them to tap into beneficial earthly rhythms such as the changing seasons, and even lunar and other cosmic cycles (full to new moon, for example). In short, you get more naturally resistant vines and wine that tastes more interesting.

In the last few years there has been an explosion of interest in biodynamics among winegrowers, not just in France but in Chile, California, Australia, Germany and New Zealand too. Silvana's mother, Francesca, was even getting into biodynamics, having heard me talk about it over dinner at their family's Tuscan home. Francesca had a huge vegetable garden at the back of the house and was asking almost daily for tips on how she could manage it in a greener, more organic way.

On a last-minute shopping trip with Francesca before I moved from Tuscany to begin my French

adventure, she asked me a question.

'What I don't understand is that you want to be biodynamic,' she said as we drove along, 'and to be biodynamic you need the compost to have these six medicinal plant preparations. So why are you using only organic compost?'

I explained that if, like me, you hadn't been able to get the six biodynamic compost preparations into your newly made compost piles before the beginning of the composting process, there is a short-cut: you make what is called biodynamic barrel compost.

Whereas it can take anything up to a year for a normal compost pile to become ready, only a month or two is needed for barrel compost. You make it by stirring the six biodynamic compost preparations into some fresh cow manure for an hour or so. Then you put the mixture into a barrel you've half-buried in the ground. Stirring in some ground-up eggshells provides calcium, which is said to help diffuse the radiation that interferes with plant growth, such as that from the fallout of Chernobyl.

I also explained to Francesca that I was planning to spread my organic municipal compost – and to make the biodynamic barrel compost – according to one of several lunar cycles to get the maximum benefit from them into the soil and into my vines. Unfortunately, before I had finished the process, the car we were travelling in was thumped by another car driven way too fast by a young guy who was not looking at the road because he was speaking on his mobile phone.

Rushed to the hospital, x-rays revealed a fracture in my back.

Not only would all plans for composting my vines have to be put on hold, but also all the rest of my work – putting in permanent danger the entire vineyard project. **E**

**Monty's story continues in next month's *Ecologist*...**



You can read more about about Monty's vineyard experience in his book, **Chateau Monty** (Portico, £16.99), out later this year to accompany the Channel 4 series.

# The gold standard

The world's favourite precious metal is hiding a dirty little secret. **Laura Sevier** reports on the truth behind the glitter, and asks whether gold can ever be green

**W**hen you think of gold, what do you see? A bling ring or gold bars in the bank?

Perhaps a golden opportunity or a golden future? Gold has long enjoyed a reputation as the most precious and valuable of metals, a symbol of wealth, status – marital and financial – and general good fortune. Yet behind its golden image lies a murky past. This non-essential, very expensive, luxury product is 100 per cent dependent on one of the most socially and environmentally exploitative industries in the world.

'I would say, per unit of output, that gold mining may well be the most destructive industry,' says Payal Sampay, a director of the NoDirtyGold campaign launched by Oxfam.

'To make one 0.330z wedding ring generates on average 20 tonnes of mine wastes. Gold mining today has a giant ecological footprint.'

## A dirty business

Two-thirds of newly mined gold is extracted from immense open-pit mines, some of which can even be

seen from outer space.

Destructive and dangerous, these mines are an environmental disaster. They pollute the air, earth and water, and leave in their wake huge piles of waste rock (some of them the height of a 30-storey building), which leach toxic metals and acid. Mine waste has turned groundwater thousands of times more acidic than battery acid. Toxic nasties used include sulphuric

acid, which can pollute the environment and water supplies for centuries; cyanide, used

to make the gold leach out of the ore, which is highly toxic to people and wildlife – a dose the size of a grain of rice can be fatal; and mercury.

The aftermath of large-scale mining is a contaminated landscape of devastation. Yet in many developing countries, the companies that have enriched themselves through this destruction are not held accountable for mitigating it. Profits are reaped by investors overseas and central government, rather than the communities that have to bear the true costs of mining – environmental damage and pollution, loss of traditional livelihoods and deteriorating public health. Mining has also been linked to human rights abuses and forced displacement – between 1995 and 2015, approximately half the gold produced worldwide has or will come from indigenous people's lands.

Small-scale mines have their own set of problems, including mercury pollution and using children as miners, which the International

## This page top:

Wedding band by Cred; acorn pendant by Fifi Bijoux; bracelet by Cred in collaboration with Rosillo de Blas  
**Opposite:** Stacker ring by Cred

Labour Organization calls one of the 'worst forms of child labour'.

So what can be done? 'Gold production and producers need to be regulated and held accountable for the true impact and cost of gold-production,' says Stephanie Roth, a former *Ecologist* journalist who helped set up a campaign to stop a 13-million-tonne gold mine being dug in Rosia Montana, rural Romania (go to [www.banktrack.org](http://www.banktrack.org) and click on 'dodgy deals'). She is involved in a coalition of several Romanian NGOs that are pressing for a cyanide ban in Romania ([www.bancyanide.ro](http://www.bancyanide.ro)). If the proposed cyanide bill becomes law it could stop the mine being built – and become a precedent that could be copied by other countries.

'Miners always get away with and profit from unregulated destruction,' says Stephanie. 'If no changes occur, more and more remote forests will vanish and more people will be driven off the lands. Do we agree to this? Do we agree that tonnes of cyanide – in its gaseous form it was used to kill the Jews at Auschwitz and Maidanek – can be released into our environment year after year? Is this progress and do we agree to wear such kinds of gold? Life is more precious than gold.'


### Golden rules

There are ways to avoid buying into this dodgy, dirty industry. The simplest is to steer clear of newly mined gold and buy jewellery from antique shops instead. Or go for recycled gold. Of all the gold in use or storage today, around two-thirds is newly mined. The remainder comes from recycling: old jewellery, bars, coins and gold extracted from computers and mobile phones. Yet recycled gold is tricky to identify because most jewellers have no idea where their gold comes from. Gold manufacturing uses gold from multiple sources – it must be purified, smelted, amalgamated and combined into forms jewellery makers can use. In production terms there is no straight line from mine to shop.

Jewellers, as the public face of the industry – more than 80 per cent of gold is used for jewellery – must be

held accountable for the damage done in creating their merchandise. One step jewellers and retailers can take is to sign up to the NoDirtyGold Campaign's '12 Golden Rules', a set of human rights and environmental criteria that include things such as not mining in areas of ecological significance and not dumping mine waste into rivers and oceans. Twenty-eight major jewellery retailers have signed up so far. The rules are only voluntary, but some are taking bold steps: in February, five retailers pledged their support for the protection of Alaska's Bristol Bay from a large-scale gold-copper mine that would threaten the local people's fisheries, water and traditional ways of life.

The Golden Rules are a good start. But work needs to be done to ensure promises are kept. A small number of eco jewellers (see column) have managed to create traceable, transparent supply chains, and source cleaner, greener, more fairly traded gold. Although, as yet, there is no independent verification process that can guarantee the gold is 100 per cent green or ethical, this is set to change. Chichester-based jeweller Cred is working with the Association for Responsible Mining (ARM) and The Fairtrade Foundation (FF) to develop a Fairtrade precious metals process. 'It's the way the industry has to go,' says Cred founder Greg Valerio. 'That's been our mission with Cred – to get a robust Fairtrade process for small-scale miners going.'

Watch this space... 

### What you can do

Call on the mining and jewellery industries to provide an alternative to 'dirty gold':

- Sign the NoDirtyGold pledge, visit [www.nodirtygold.org](http://www.nodirtygold.org)
- Support CAFOD's Unearth Justice Campaign, visit [www.cafod.org.uk](http://www.cafod.org.uk)



## Top three eco jewellers

### Cred

Sourcing 'green' and ethical gold since 1996, Cred was the first UK company to offer an eco alternative. The company has a partnership with miners in a co-operative in Choco, an underdeveloped region in northeast Columbia, called the Green Gold 'Oro Verde' project. The aim is to improve the wellbeing of small-scale mining communities through social and environmental standards, including restoring and reforesting mined land and avoiding

toxic chemicals (i.e. cyanide, sulphuric acid and mercury). Cred is one of the founding members of the Association for Responsible Mining (ARM), a platform for small-scale mines to come together, and the British Ethical Jewellers Association (BEJA).

'We're trying to pioneer something that's positive – to put alternatives on the shelf,' says founder Greg Valerio.

[www.credjewellery.com](http://www.credjewellery.com); [www.ethicalbullion.com](http://www.ethicalbullion.com)

### Fifi Bijoux

Formerly head of design for a commercial jewellery firm, Vivien Johnston created Fifi Bijoux in 2006 after becoming concerned about labour issues in factories in Asia, and discovering the social and environmental horrors behind mining precious metals and stones. She began with a single commission from a politician who wanted to propose to his human rights lobbyist girlfriend. She only uses gold sourced from socially and environmentally responsible, community-operated mines. 'There's a bit of an ethical goldrush at the moment and even though demand is outstripping supply, I'm not about to dilute my ethics,' Vivien says. She is also a founding member of the BEJA. Ten per cent of profits from sales from her Acorn pendant (main picture) goes to the Entebbe's Women's Association in Uganda. [www.fifibijoux.com](http://www.fifibijoux.com)

### Ingle & Rhode

'Creating a traceable supply chain is an effort of will but less hard than people would have you believe,' says Ingle & Rhode co-founder David Rhode. Since 2007, he and business partner Tim Ingle have sourced gold from the EcoAndina Foundation, in north-west Argentina. Small-scale mining communities work there under carefully regulated conditions to produce metals that are both environmentally friendly and socially beneficial. The Foundation also helps the community with eco-friendly agriculture and solar powered electricity – gold is just one part of its strategy to help provide an income for villagers. Ingle & Rhode gives 10 per cent of its profit back to these communities for health, education and development projects. [www.ingleandrhode.com](http://www.ingleandrhode.com)



# The retrofit revolution

A growing number of homeowners are taking the green initiative. **Laura Sevier** reports

**A**t first glance, some houses look just the same, identical to any other on their particular street. It is only on closer inspection that their identity as 'eco homes' become apparent.

When people think of eco homes, most think of the ultra-modern. But 'eco-retrofits' can come in all ages, shapes and sizes, ranging from 17th-century cottages to 1920s semis.

'An eco-renovation, or retrofit, is when you look at every aspect of a house and have a goal of getting the energy use down,' says George Marshall, a climate campaigner who has fully retrofitted his house in Oxford (see 'The Yellow House' opposite). 'A lot of homes now have insulation or more efficient boilers, but that's not eco-renovation, that's home improvement.'

Ecovation ([www.ecovation.org.uk](http://www.ecovation.org.uk)), which Marshall helped set up, is the first UK website to feature case studies of people's eco-renovation projects, written in their own words. Last November, as part of Ecovation's Open Eco Houses weekend, 18 houses in Oxfordshire opened their doors to share the techniques and opportunities of eco-renovation.

'People were really excited and

inspired by it,' says Marshall. 'It's all happening. For the first time ever there's the sense of a movement – and there's a real buzz around it.'

What's more, in Marshall's view, retrofitting is about to take off in a big way. 'The retrofitting pioneers are not just showing how it can be done – they're showing what will be done. These are houses of the future. It's about getting ahead before it's made compulsory – why not have the benefits now?'

As well as saving energy and money, by using such devices as skylights and natural ventilation, eco renovations can also make a house healthier, fresher and lighter. 'It makes the house feel like a nicer place,' says Marshall. 'More attractive, desirable, fun, and interesting. Yet some people would rather spend £20,000 on a new kitchen. How insane is that?'

## Why retrofit?

Faced with the realities of climate change and peak oil, retrofitting is a wise move. It can increase your home's self-sufficiency, energy efficiency and ability to cope with more rainfall – as well as lower its carbon emissions. Each household in the UK creates around six tonnes of carbon dioxide a year – double



It makes the house feel like a nicer place. Yet some people would rather spend £20,000 on a new kitchen. How insane is that?

the annual carbon dioxide emissions of the average car. Full retrofits can mean a reduction of 50 per cent to 75 per cent – in some cases more. This is why retrofits are likely to be 'the houses of future'.

Another reason is grounded in practicalities. Although new houses and other buildings are currently being built to be more sustainable, of the 25 million houses in the UK, newbuilds account for less than one per cent of the housing stock. Many older houses have solid walls, poor insulation, draughty windows and inefficient heating systems. Housing is responsible for a quarter of the UK's CO<sub>2</sub> emissions and there are targets to be met (a 60 per cent reduction in CO<sub>2</sub> emissions by 2050), so there is much debate as to what to do with our older homes.

'There is a "demolish and rebuild" argument used by some to ensure that all housing is relatively new and sustainable,' says James Honour, architect and senior consultant at the Building Research Establishment (BRE). 'The reality, however, is that the cost of demolition in terms of economics and construction waste, plus historic and townscape context, are all important and have values.'

BRE is very keen to encourage

the refurbishment of existing stock. Retrofitting older buildings is preferable because it also avoids the waste associated with demolition and saves the embodied energy within them rather than using more energy to make new buildings (which includes quarrying, transporting and processing the raw materials, as well as the activity of construction itself. Bricks, concrete, plastics, PVC and steel all contribute to the embodied energy). It also preserves the mix of architecture that makes the urban landscape a more humane and interesting place to live and work in.

#### How to do it

The cost of retrofitting depends on the building, the region and extent of the works, with different levels of retrofitting and refurbishment depending on the planning laws, construction of the building, historic value and unique environmental and thermal performance. Once these are determined, it can be decided what is best for the building and how radical the works will be. It is cheaper to combine energy-efficiency measures with repair and improvement work.

As well as the Ecovation website, guidance and information is available from the Energy Saving Trust ([www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)), which provides 100 easy-to-read publications as downloadable pdfs. Sixteen publications focus specifically on refurbishment, and many others include elements for refurbishment such as heating, windows and lighting. Organisations such as the BRE have projects in progress, such as T-Zero, and a 'Rethinking Housing Refurbishment' team addressing costs, paybacks, technical constraints and environmental impacts (see [www.bre.co.uk](http://www.bre.co.uk) and [www.rethinkinghousingrefurbishment.co.uk](http://www.rethinkinghousingrefurbishment.co.uk)). Some retrofitters have a background in green architecture or eco building. Others are self-taught but employ experts or the services of a trusty builder willing to experiment. There are currently only a small number of fully retrofitted homes in the UK – but they are proof it can be done. **E**



Retrofitting older buildings is preferable because it avoids the waste of demolition and saves the energy within them



## Three good retrofits

### The ex-council house: The Yellow House

Climate campaigner George Marshall transformed his 1930s mid-terrace ex-council house in Oxford into an eco-home on a limited budget. Features include passive solar thermal heating, thorough external and internal insulation, improvements to the radiators and boiler, water-conservation devices (the house uses 60 per cent less water than an average family home), A-rated appliances, low-energy bulbs and reused and salvaged materials. 'We did it as part of a general renovation,' says George. 'The solar panel was the big cost – for everything else the cost of doing it "eco" was maybe £5,000 or so more than it would have cost to do it "non-eco". That £5,000 has reduced energy and water consumption by two-thirds, and we've created something we're really proud of and excited by.' His website – [www.theyellowhouse.org.uk](http://www.theyellowhouse.org.uk) – allows you to explore the eco-features room by room and is an excellent resource of information. It has had more than 650,000 visitors.

### The Victorian semi: Nottingham Eco House

An advanced eco-retrofit that shows what can be done with a large five-bedroom Victorian semi, Penney Poyzer and Gil Schalom (a green architect) have added features such as a rainwater system, solar thermal, compost toilets and biomass boiler. Ultra-insulation has improved the thermal performance by 900 per cent. 'To date we have spent around £85,000 on the refurb and retrofit,' says Penney. 'But bear in mind the house was a total wreck, so we would have had to have spent around £45,000 to get it sorted anyway. The installation of the wood-burning boiler meant we had to install radiators and pipework, which cost around £17,000, but since the retrofit we save around £1,500 on heating and electricity bills and £150 on water a year – and overall carbon emissions now stand at around half a tonne, including transport. Not bad for two households (a couple living here as lodgers).' See [www.msarch.co.uk/ecohome](http://www.msarch.co.uk/ecohome)



### The Housing Association Eco Home

Built in 1929, this mid-terrace house in Bournville, south Birmingham, has been retrofitted with 50 eco-friendly features, including super insulation, solar panels and a heat pump. The green roof and porous drive are designed to cope with heavy rainfall, and three garden waterbutts collect rainwater. Inside there are A-rated appliances, recycled timber kitchen units, wool carpets, water-based wall paints and a water-saving shower and toilet. Lit with low-energy lightbulbs, it also makes use of daylight with sunpipes. Outside is a vegetable patch, a bike shed, and native trees and shrubs to attract wildlife. The house belongs to a housing association established more than a hundred years ago by George Cadbury. It was chosen to pilot a green initiative – 'working' features will be included in future maintenance programmes by the Bournville Village Trust, which manages the Bournville Estate's 8,000 homes on 1,000 acres of land.

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The WISE Nuclear Monitor is a unique international newsletter serving the world-wide movement against nuclear power. Printed 20 times a year since 1978, it gives an anti-nuclear perspective on what is happening in the nuclear power industry and the resistance against it. It concentrates on grassroots movements and media through in-house written articles, backed up by one of the world's largest information archives on nuclear power.

*"When the Nuclear Monitor arrives in our office there's usually a fight between myself and the deputy editor to see who gets to read it first! They're some of the only people who really know what the global nuclear industry is up to".*

Mark Anslow, Senior Reporter,  
The Ecologist

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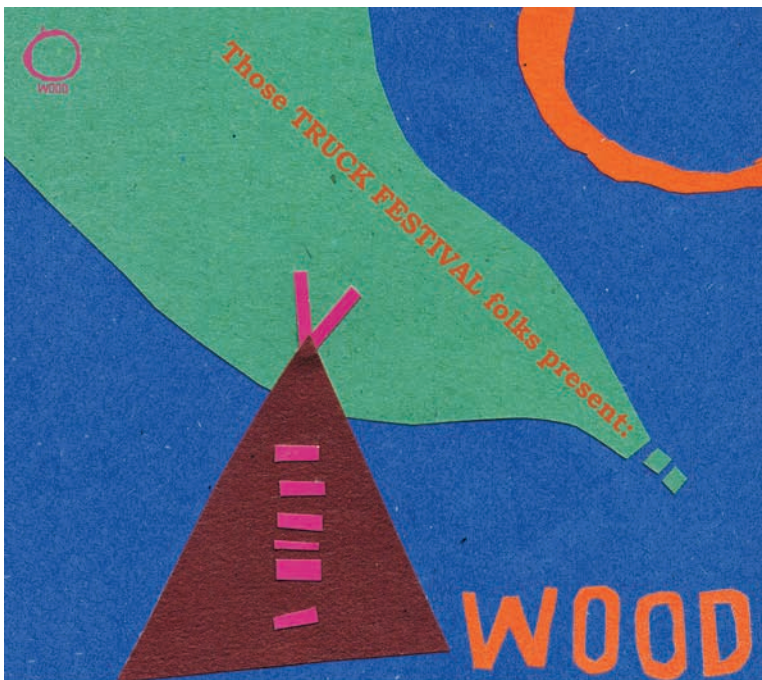
Rosalie Bertell, PhD, GNSH,  
President of the International Institute  
of Concern for Public Health, Canada.  
Recipient of the Right Livelihood Award

*"We always appreciate and value the information contained in the Nuclear Monitor about the world outside of Japan. We also would like to pay respect to the staff of WISE for their efforts in maintaining and developing such a professional and powerful organization".*

Citizens' Nuclear Information Center,  
Japan

Anyone in the UK or elsewhere who **wants to stand up against the relapse of nuclear power** and needs fresh arguments should read the Nuclear Monitor. Subscription is easy - 100 euro (paper) or 50 euro (pdf) for 20 issues.

See [www.antenna.nl/wise](http://www.antenna.nl/wise) or send us an email at [wiseamster@antenna.nl](mailto:wiseamster@antenna.nl)



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## ★ Reader offers ★

**74 Suma:** Win £250 worth of Suma organic wholefoods

**75 Thermafleece:** Win £500 worth of Thermafleece, pure British sheep's wool insulation.

**80 How On Earth:** 10% discount on How On Earth's range of organic and natural bodycare products

**81 The Organic Pharmacy:** 15% off Organic Pharmacy's range of skincare, herbs and homeopathy

**ADVERTISING POLICY** Every advertiser featured in the *Ecologist* has been vetted to ensure its products or services don't damage the environment, the people it employs or the consumer



# Food and drink

The producers on the following pages supply genuinely fresh, seasonal fruit, vegetables, fish and meat. And in most cases you can order online and have everything delivered direct to your door. You can also feel safe in the knowledge that you're buying environmentally sound, delicious food that supports small, independent producers

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### FRUIT & VEGETABLES

Do you live near a farmers' market? For a list of farmers' markets around the country, go to [www.farmersmarket.net](http://www.farmersmarket.net). Along with many greengrocers, farmers' markets are a great source of locally produced, fresh, seasonal fruit and veg. Alternatively, if you don't live near a good grocer or farmers' market, sign up for a local box scheme. For 15 reasons to join one, and a list of UK suppliers go to [www.theecologist.org](http://www.theecologist.org) and click on the 'Find a box scheme' icon.

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- Deverill Trout Farm**  
[www.purelyorganic.co.uk](http://www.purelyorganic.co.uk)
- Graig Farm Organics**  
[www.graigfarm.co.uk](http://www.graigfarm.co.uk)
- Loch Fyne**  
[www.lochfyne.com](http://www.lochfyne.com)

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- Higher Hacknell Farm**  
[www.higherhacknell.co.uk](http://www.higherhacknell.co.uk)
- Sheepdrove Organic Farm**  
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[www.wellhungmeat.com](http://www.wellhungmeat.com)

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**How can I be sure my meat and fish will arrive fresh?**  
 Fresh meat and fish is carefully wrapped in insulated boxes with ice packs, ensuring that frozen goods stay frozen and chilled items stay chilled. If you know that you won't be at home when it's delivered then you can always specify a place for it to be left/hidden.



# Suma

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Suma is a wholefood wholesaler and workers' cooperative, owned and managed by its workers, and distributing thousands of organic, fairtrade, cruelty-free and ethical products to independent retailers and food cooperatives in the UK.

**What is a food cooperative?**

Food cooperatives (or food groups) are people within a community who get together and buy food directly from wholesalers or producers.

**What are the benefits?**

Food cooperatives enable your community to buy organic and fairtrade products at wholesale prices, reduce car journeys through home delivery and limit packaging by buying everyday items in bulk sizes, which you can then share with your friends.

**Group size and costs**

Group sizes can vary from a family to a whole community. Typical minimum order costs for free delivery are £250 for most of England and Wales, £300 for Northern Scotland and £375 for Southern regions.

Suma is offering *Ecologist* readers the opportunity to set up a food group and win £250 worth of wholesale products to share.



**How to enter:** For your free food group pack send your name and address to *Ecologist* Offer, Suma, Lacy Way, Lowfields Business Park, Elland, HX5 9DB for or email [ecologist@suma.coop](mailto:ecologist@suma.coop) All respondents by 1 May 2008 will be entered into a draw for a free Suma order up to £250. Delivery to UK address only. Winner will need to have an active Suma group to claim the prize. No cash alternative. The winner will be notified by post or email.

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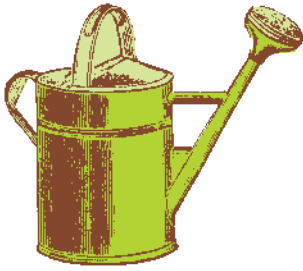
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# Home and garden

From garden tools to bed linen, cleaning products and furniture – by simply changing our household buying habits we can reduce our carbon footprint and the chemical cocktail that makes its way into our homes. So visit the online producers below for ideas on how to green your home

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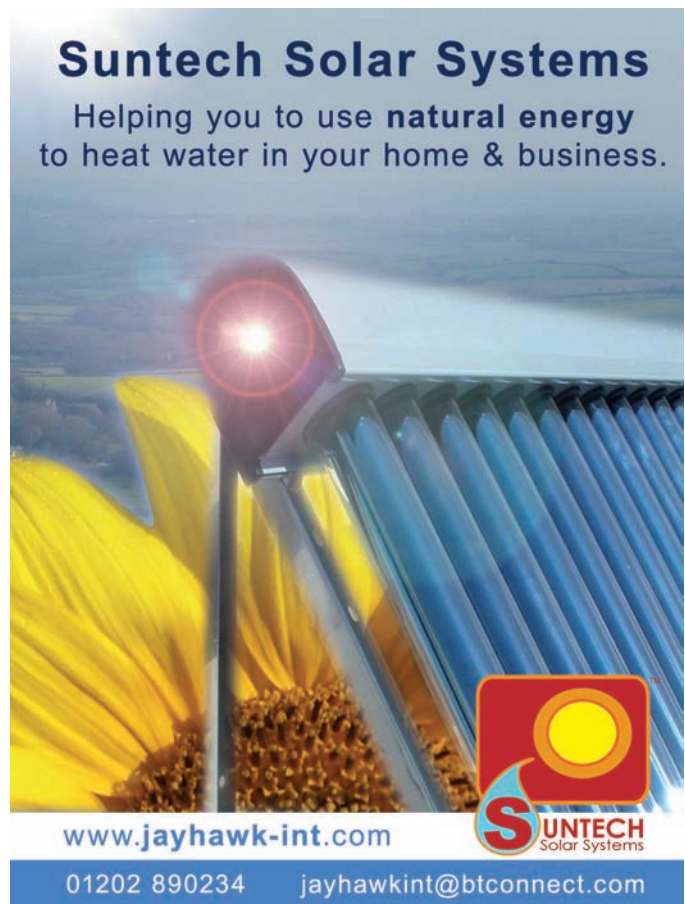
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# Home energy

Use your electricity bill to help fight climate change. The Ecologist and Ecotricity have teamed up to make it as easy as possible to support the transition to clean, locally supplied energy – and we encourage you to take steps at home to reduce your energy demand

## Eco power campaign

How do we meet the UK's energy needs from clean, renewable sources of energy that come from sources as local as possible?

- 1 Switch to Ecotricity as our energy supplier
- 2 Reduce our energy demand
- 3 Localise our energy supply... individually and in our communities

Our current energy sources are non-renewable and increasingly expensive: gas (40 per cent), coal (30 per cent), nuclear (20 per cent) and oil (five per cent). We need to move to non-polluting, small-scale energy sources generated as close to users as possible, such as wind, hydro, solar and tidal.

### What's wrong with nuclear?

Dale Vince, founder and CEO of Ecotricity, says, 'Fossil fuels' days are numbered. Nuclear, often held out as the answer to our looming energy gap, is not a renewable fuel. Uranium is finite; its cost has risen tenfold in the past year or so, on the back of increased worldwide usage. It's another fossil fuel story waiting to unfold: mining will peak, demand will outstrip supply and it will one day run out. Renewable energy is the only energy source we can use once and then use again and again, and it's the only sustainable energy source.'

## HAVE YOU MADE THE SWITCH?

Switching to Ecotricity for your electricity supply is one of the easiest single things any of us can do to fight climate change.

### Why Ecotricity?

Only around five per cent of the UK's energy is currently generated from renewable sources, and we need much, much more if we are to tackle climate change effectively and live more sustainably. Ecotricity is dedicated to building new sources of renewable energy – the only way to change the UK's energy mix and effectively fight climate change. The more customers it has, the more it can build – it's as simple as that!

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### Why switch now?

This year Ecotricity will invest £25 million in New Energy, doubling its wind capacity from 27 to 54 megawatts in the process. It does this with the support of 30,000 customers right now. With 100,000 customers it could invest more than £40 million, build around 53 megawatts of electricity and save roughly 200,000 tonnes of CO<sub>2</sub>.

**Switching is easy** – simply pick up the phone or go online and Ecotricity will do all the hard work for you. Switch today and get a free year's subscription to the *Ecologist*. Just quote 'Eco Offer 2' to get this great offer. **Call free on 08000 326 100 or go to [www.ecotricity.co.uk/ecologist](http://www.ecotricity.co.uk/ecologist). Terms and conditions apply.**



★ **100,000**  
TARGET

★ **32,674**  
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[www.greensystems.net](http://www.greensystems.net)
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[www.powertech-solar.com](http://www.powertech-solar.com)



# Clothing

The virtual boutiques and retailers featured on these pages stock a range of well-made, stylish and ethical clothes. Precise sizing charts make it easy to find the right size for you – and if something doesn't fit, or you don't like it, simply return it. Being fashionable and being ethical are no longer at odds...

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[www.ciel.ltd.uk](http://www.ciel.ltd.uk)
- ClothWorks**  
[www.clothworks.co.uk](http://www.clothworks.co.uk)
- Ecobtq**  
[www.ecobtq.com](http://www.ecobtq.com)
- Enamore**  
[www.enamore.co.uk](http://www.enamore.co.uk)
- Equa Clothing**  
[www.equaclimbing.com](http://www.equaclimbing.com)
- Junky Styling**  
[www.junkystyling.co.uk](http://www.junkystyling.co.uk)
- Natural Dye Company**  
[www.naturaldyecompany.com](http://www.naturaldyecompany.com)
- Natural Store**  
[www.thenaturalstore.co.uk](http://www.thenaturalstore.co.uk)

- Pachacuti**  
[www.pachacuti.co.uk](http://www.pachacuti.co.uk)
- Pierre Garroudi**  
[www.pierregarroudi.com](http://www.pierregarroudi.com)
- Sari**  
[www.saricouture.com](http://www.saricouture.com)
- CASUALWEAR**
- Bishopston Trad. Comp**  
[www.bishopstontrading.co.uk](http://www.bishopstontrading.co.uk)
- Ecotopia**  
[www.ecotopia.co.uk](http://www.ecotopia.co.uk)
- Green Fibres**  
[www.greenfibres.co.uk](http://www.greenfibres.co.uk)
- Howies**  
[www.howies.co.uk](http://www.howies.co.uk)
- Inbi Hemp**  
[www.inbi-hemp.co.uk](http://www.inbi-hemp.co.uk)

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### Ecotip Read the eco label

Are you confused by the eco label? Check out exactly what are the standards each label is adhering to by visiting <http://ecolabelling.org/type/textiles>



# Bodycare & cosmetics

The best way to ensure healthy skin is to maintain a healthy diet, get enough sleep and keep stress levels low. If you do buy products for your face or body, try to make sure they are based on natural ingredients. The companies listed here carry products that have not been tested on animals; they contain no parabens, no petrochemicals and no synthetic ingredients



## How On Earth

**10% discount on all How On Earth skin, hair and baby care products**

How On Earth is an online store that has carefully sourced an extensive range of skin, hair and baby care products, all of which are based on natural ingredients, are free from parabens and other potentially toxic ingredients, and are not tested on animals. The How On Earth team screens all potential suppliers to ensure their environmental, social and trading policies reach the company's high standard.

Founder Shona Stewart is passionate that being ethical no longer has to represent a compromise on style, and

that green products can be as luxurious, beautiful and effective as other brands.

'Our principles are not additions but an integral part of who we are and they run through every decision we make' – Shona Stewart, founder, How On Earth.

### Shona's favourites for spring:

- Barefoot Botanicals Rosa Fina Lip Balm
- Pangea Organics Italian Red Mandarin Facial Cream
- Weleda Rosemary & Ginger Shampoo
- John Masters Organics Citrus & Neroli Detangler

**To receive your 10% discount, order online at [www.howonearth.co.uk](http://www.howonearth.co.uk) or by phone on 01444 454 212, quoting promotional code ECO.**

**Offer valid until 30/04/08.**



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# ★ Organic pharmacy

The Organic Pharmacy is the first and only pharmacy in the world dedicated to health and beauty using organic products and treatments.

Founded by Francesco and Margo Marrone in 2002, they now run a number of London pharmacies that specialise in herbs, homeopathy and organic skincare.

The Organic Pharmacy range is designed by the company's qualified homeopath and pharmacist, handmade and freshly prepared in the pharmacy's laboratory using

cold pressed oils, botanical extracts and aromatherapy oils, resulting in formulas that are effective, modern and therapeutic.

The company is Soil Association-approved and is fully registered with The Royal Pharmaceutical Society of Great Britain.

#### The Organic Pharmacy promises:

NO artificial preservatives  
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**Ecologist readers can shop online at The Organic Pharmacy and enjoy a 15% discount on its range of skincare, haircare and organic make-up at [www.theorganicpharmacy.com](http://www.theorganicpharmacy.com) quoting 'the Ecologist'. Offer valid until 30/04/08.**

## BODYCARE ESSENTIALS

### Akamuti

[www.akamuti.co.uk](http://www.akamuti.co.uk)

### Barefoot Botanicals

[www.barefoot-botanicals.com](http://www.barefoot-botanicals.com)

### Earthbound Organics

[www.earthbound.co.uk](http://www.earthbound.co.uk)

### Ecotopia

[www.ecotopia.co.uk](http://www.ecotopia.co.uk)

### Essential Care

[www.essential-care.co.uk](http://www.essential-care.co.uk)

### Finetaste.co.uk

[www.finetaste.co.uk](http://www.finetaste.co.uk)

### Lavera

[www.lavera.co.uk](http://www.lavera.co.uk)

### Life Giving Organics

[www.LifeGivingOrganics.com](http://www.LifeGivingOrganics.com)

### My Being Well

[www.mybeingwell.com](http://www.mybeingwell.com)

### The Organic Pharmacy

[www.theorganicpharmacy.com](http://www.theorganicpharmacy.com)

## HEALTH & HOMEOPATHY

### Ainsworths

[www.ainsworths.com](http://www.ainsworths.com)

### Helios Homeopathic Pharmacy

[www.helios.co.uk](http://www.helios.co.uk)

### Optima

[www.optimahealthcare.co.uk](http://www.optimahealthcare.co.uk)



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### Pure Potions

[www.purepotions.co.uk](http://www.purepotions.co.uk)

### Revital

[www.revital.com](http://www.revital.com)

### The Organic Health Shop

[www.baughdell.co.uk](http://www.baughdell.co.uk)

## PERFUME

### Aromasciences

[www.aromasciences.com](http://www.aromasciences.com)

### Farfalla

[www.farfalla-essentials.co.uk](http://www.farfalla-essentials.co.uk)

### Dolma

[www.dolma-perfumes.co.uk](http://www.dolma-perfumes.co.uk)

### Oshadhi

[www.oshadhi.co.uk](http://www.oshadhi.co.uk)



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# Finance

*Ethical finance is about taking control so that your finances are not tied up in deals you wouldn't like – like trade with oppressive regimes or funding dirty coal plants, oil extraction and unsustainable logging operations. Ethical banks finance companies and projects that benefit people and the environment so your money is working for – not against – the world*

## Where's my money?

### How banks work

A bank is more than just a safe place to keep your money. Banks profit by lending your money to someone else. You don't get to choose who they lend the money to, or what your money is used for.

### Why Triodos is different

Triodos Bank is a different kind of bank. It doesn't simply refuse to put money into unethical enterprises; it actively seeks out and promotes sustainable, entrepreneurial businesses and organisations driven by values and ideas. It is behind one of the UK's best-known renewable energy companies, Ecotricity, as well as hundreds of organic and environmental initiatives.

### A transparent approach

Triodos is also the only commercial bank to publish a list of every loan it makes and to provide that information to all of its savers – so as a saver you'll know exactly how your money is being used.

### Some of the ethical businesses and charities that your savings could help to support:

- Ecotricity
- River Cottage
- Cafédirect
- Neal's Yard Remedies
- The Soil Association
- The New Economics Foundation
- Youth Hostel Association
- Greenpeace UK
- Fordhall Farm

## The Triodos Mini Cash ISA Tax-free savings for a better future

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**As a consumer you have power. The power to say YES to renewable energy and drive its success, or NO to nuclear energy and help to end it. With Triodos, you can apply the same rigour and values to your savings.**

The Triodos Mini Cash ISA is a savings account that offers you the reassurance that your money will actively do good, and a healthy rate of interest.

Nuclear power, GM and pharmaceuticals may be stimulating areas for an ordinary bank, but renewable energy, organic farming and sustainable trade are what gets Triodos excited.

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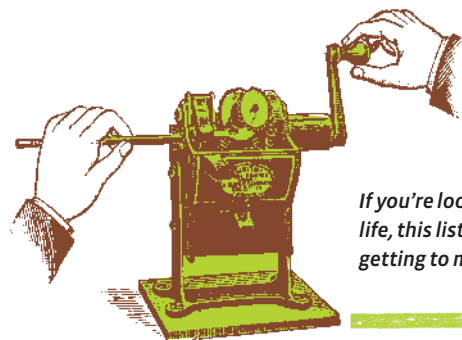
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# Business services

If you're looking to green your company by changing suppliers, or just want to use more ethical services in your everyday life, this list of business and service suppliers offers an eco solution. From alternative office supplies and ethical finance to getting to meetings, this range of companies demonstrates your business can be greener and greater than ever before

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- \* Reference articles on a range of selected topics
- \* Send virtual cards, download high-res backgrounds

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## CAREERS

### Charity Action Recruitment

[www.c-a-r.org.uk](http://www.c-a-r.org.uk)

### Charity Connections

[www.charityconnections.co.uk](http://www.charityconnections.co.uk)

### Charity job

[www.charityjob.co.uk](http://www.charityjob.co.uk)

### Countryside Jobs Service

[www.countryside-jobs.com](http://www.countryside-jobs.com)

### Eden Recruitment

[www.edenrecruitment.co.uk](http://www.edenrecruitment.co.uk)

### Ends Environmental Job Search

[www.ends.co.uk/jobs/about.htm](http://www.ends.co.uk/jobs/about.htm)

### Environment Job

[www.environmentjob.co.uk](http://www.environmentjob.co.uk)

### Evergreen Resources

[www.evergreen.org.uk](http://www.evergreen.org.uk)

### Execucare

[www.execucare.com](http://www.execucare.com)

### Getalife

[www.prospects.ac.uk](http://www.prospects.ac.uk)

### One World

[www.oneworld.net](http://www.oneworld.net)

### The Ethical Careers Service

[www.peopleandplanet.org/](http://www.peopleandplanet.org/)

## OFFICE RESOURCES

### CARTRIDGES

#### Action Aid recycling

[www.actionaidrecycling.org.uk](http://www.actionaidrecycling.org.uk)

### COFFEE AND TEA

#### Fairtrade

[www.fairtrade.org.uk](http://www.fairtrade.org.uk)

### PAPER

#### Evolve

[www.evolve-papers.com](http://www.evolve-papers.com)

## STATIONERY

### Ecotopia

[www.ecotopia.co.uk](http://www.ecotopia.co.uk)

### Remarkable

[www.remarkable.co.uk](http://www.remarkable.co.uk)

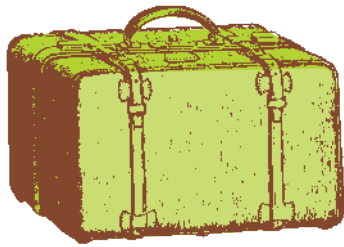
## TELEPHONE & INTERNET

### Green ISP

[www.greenisp.net](http://www.greenisp.net)

### The Phone Co-op

[www.thephone.coop](http://www.thephone.coop)



# Holidays

There are plenty of ways to take a planet-friendly break and be an ethical traveller, from staying in a yurt in Devon to ecotourism holidays that benefit local communities and the environment. See below to find out about places in the UK and abroad where you can holiday with a green conscience

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## UK PLACES TO STAY

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**Bangors Organic Cornwall**  
[www.bangorsorganic.co.uk](http://www.bangorsorganic.co.uk)

**Beech Hill Farm Stay Sussex**  
[www.sussexcountryretreat.co.uk](http://www.sussexcountryretreat.co.uk)

**Beer Mill Farm Devon**  
[www.selfcateringcottagesdevon.co.uk](http://www.selfcateringcottagesdevon.co.uk)

**Blue Reef Cottages Isle of Harris**  
[www.stay-hebrides.com](http://www.stay-hebrides.com)

**Doone Stone Lodges**  
[www.doone-knoydart.co.uk/lodge](http://www.doone-knoydart.co.uk/lodge)

**Eco-Lodge Linlshire**  
[www.internationalbusinessschool.net](http://www.internationalbusinessschool.net)

**E.Lochhead Country House & Cottages**  
[www.eastlochhead.co.uk](http://www.eastlochhead.co.uk)

**Higher Lank farm**  
[www.higherlankfarm.co.uk](http://www.higherlankfarm.co.uk)

**Holiday Cottages Snowdonia**  
[www.pentrebach.com](http://www.pentrebach.com)

**Kidlandlee cottages Northumberland**  
[www.kidlandlee.co.uk](http://www.kidlandlee.co.uk)

**Lancrigg Lake District**  
[www.lancrigg.co.uk](http://www.lancrigg.co.uk)

**Milden Hall Suffolk**  
[www.thehall-milden.co.uk](http://www.thehall-milden.co.uk)

**Natural Retreats UK**  
[www.naturalretreats.com](http://www.naturalretreats.com)

**Penpynfarch**  
[www.penpynfarch.co.uk](http://www.penpynfarch.co.uk)

**Percy's Country Hotel Devon**  
[www.percys.co.uk](http://www.percys.co.uk)

**Shropshire Ecocabin**  
[www.ecocabin.co.uk](http://www.ecocabin.co.uk)

**The Hay House Devon**  
[www.blacklakefarm.com](http://www.blacklakefarm.com)

**The Straw Bale Cabin Yorkshire**  
[www.homegrownhome.co.uk](http://www.homegrownhome.co.uk)

**Trelowarren cottages Cornwall**  
[www.trelowarren.com](http://www.trelowarren.com)

# House

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# Courses and events

Whether it's professional training you're after or a book that can teach you how, ideas that can change the world or practical skills to help with sustainable living, this is the place to find out about courses, books and websites that will equip you with more information on how to help people and planet



## Ecotip City farmer

Learn about chickens, muck out horses and learn more about life on a city farm or community garden. To find your nearest urban farm, see [www.farmgarden.org.uk](http://www.farmgarden.org.uk)



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[www.schumachercollege.org.uk](http://www.schumachercollege.org.uk)

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Informal enquiries to:  
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A partnership between the Centre for Human Ecology and the  
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For more information, write to:

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Director: Helena Norberg-Hodge

### ECO CENTRES AND COURSES

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#### Attenborough Nature Centre

[www.attenboroughnature.co.uk](http://www.attenboroughnature.co.uk)

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#### Childer Wood Heavy Horses

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#### Dudmaston

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[www.heeleyfarm.org.uk](http://www.heeleyfarm.org.uk)

#### Hockerton Housing Project

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#### Low-impact Living Initiative

[www.lowimpact.org](http://www.lowimpact.org)

#### Marston Vale

[www.marstonvale.org](http://www.marstonvale.org)

#### MERCI centre for sustainable living

[www.merci.org.uk](http://www.merci.org.uk)

#### Middlewood

[www.middlewood.org.uk](http://www.middlewood.org.uk)

#### Natural Sciences Centre

[www.naturalsciences.co.uk](http://www.naturalsciences.co.uk)

#### Pump House Environment Centre

[www.dwt.org.uk](http://www.dwt.org.uk)

#### Solariscentre

[www.solariscentre.org](http://www.solariscentre.org)

#### Southport Eco Visitor centre

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#### The Living Rainforest

[www.livingrainforest.org](http://www.livingrainforest.org)

#### Woodsmoke

[www.woodsmoke.uk.com](http://www.woodsmoke.uk.com)

# A sustainable A to ZED

From green building and retrofitting to social values and happier lives, **Mark Anslow** applauds a remarkable book that runs the eco-development gamut from A to ZedLiving

This book is a remarkable achievement, both for the initiative it documents – probably the most comprehensive sustainable building system in the UK – and for being a reference manual as at home on the coffee table as it is on the study shelf.

Bill Dunster was behind the team that built what is still the UK's best-known and arguably best-performing eco-friendly development – BedZed (Zero Energy Development) in South London. As this book makes clear, however, BedZed was far from an isolated experiment. Dunster and colleagues have created what is described as the 'ZedLiving' – a complete suite of building designs, complementing systems, principles and even social values.

Having set out the context for eco-friendly development, the authors examine in depth the technologies and techniques that form

a part of a low-carbon life. Nothing is left out: home food production, connections with local (organic) farms, the social responsibilities of those living in a ZED and even a chapter on 'living a happier life'.

The latter stages of the book are technical – detailed investigations of the carbon and energy balances of renewable technologies, illustrations of construction techniques, and computer analyses of energy use and heat loss – but invaluable to anyone needing to make ecologically sound choices in building, or 'retrofitting', a house.

It is possible to find fault with ZedLiving as described in *The Zed Book* – its utter thoroughness does border on the Orwellian at points, and the building techniques used still involve plenty of concrete, metal and mineral wool – but to do so would miss the point. Dunster and his team have created a

genuinely *replicable* eco-development: cost-effective enough that housing associations will build them; 'integrated' in a way that would leave a local authority in fits of joy, and simple enough that any competent local tradesman can put one up.

This book is at once an instruction manual and a testament; a roadmap to future success, but also, crucially, a laudable record of what has already been achieved.



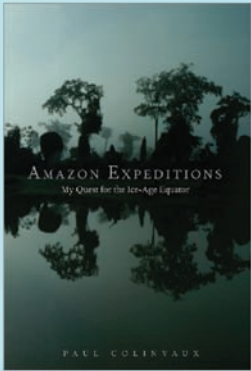
## The Zed Book: Solutions for a Shrinking World

Bill Dunster, Craig Simmons & Bobby Gilbert  
£40 (Taylor & Francis)

# AMAZON EXPEDITIONS

*My Quest for the Ice-Age Equator*

PAUL COLINVAUX



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Stephen Nugent, Goldsmiths College, University of London

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## EXHIBITION

### Surviving the Suburb: The Climate Machine

Laura Sevier

Grow fruit beside your sofa and shiitake mushrooms under your kitchen sink. These are just some of the things you may be able to do in an urban home of the future if this installation by Dutch urban planner and designer Ton Matton is anything to go by.

This 'optimistic research machine' presents possibilities for city life transformed by climate change and globalisation – what effect will it have on urban structures and homes? How can we become more self-sufficient with limited outdoor space?

Some of Matton's pieces are usable, such as the wacky green chicken shed designed for a suburban terrace; others symbolic and conceptual, like the 'climate machine' for growing bananas – an old electric fan heater, a cooling fan, a light and a tree stump in a glass display cabinet. Then there are the 'survival jackets', whose built-in 'shops' allow hairdressers, bakers or fishermen to start 'informal' economies and sell on the street.

The overall vision revolves around a new kind of urban environment, one not dominated by the dull, uniform designs of large-scale developers. 'Free-range' and infused with elements of country life, it's a thought provoking installation.

Until 26 April. Royal Institute of British Architects, 66 Portland Place, London W15. For information see [www.architecture.com](http://www.architecture.com)



# Rescue mission

We have the tools to change the world, but do we have the will? **Nicki Ferguson** on the plan to save civilisation

Complacency is rife in much of today's capitalist culture. There's little doubt that most of us care about poverty in Africa and fading rainforests in Brazil, yet throwing a few coins at the issue is usually the extent of our consideration. It's too easy to forget that the Earth's natural systems and resources are the foundation of our high-tech society.

*Plan B 3.0: Mobilizing to Save Civilization* reminds us of our dependence – on almost every front – upon the Earth. Author Lester Brown demonstrates, in one of many examples, the climatic effect of our dietary choices, where 'shifting from a diet rich in red meat to a plant-based diet cuts greenhouse gas emissions as much as shifting from a Suburban SUV to a Toyota Prius.'

It is the starkness of these comparative explanations that gives *Plan B 3.0* its kick, by placing our individual choices into context and helping us consciously to reconnect the spuds on our dinner plates with the ground from which they grew.

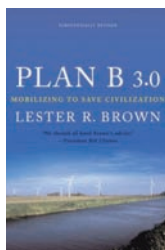
An overview of our current environmental and economic situation, *Plan B 3.0* doesn't pull any punches, but nor does it depress with doomsday apparitions. Its message is relevant to every human being on the planet and covers a broad spectrum of global issues, from the impact of unstable governments to

the sustainability of our natural systems.

Brown has the vision and roadmap for achieving an environmentally sustainable economy. By bringing together a collection of good ideas he affirms that we do have the technological tools, economic instruments and financial resources to change the current momentum of environmental and civilian decline.

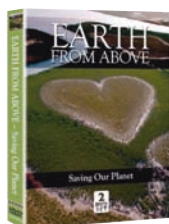
A key ingredient in Lester Brown's plan is speed. By shattering our complacency, rallying our troops and making more informed decisions now, we still have time to move forward as an international community of eco economists and, as he sees it, to save civilisation.

This informative and encouraging book leads by example. Visit the Earth Policy Institute website ([www.earth-policy.org](http://www.earth-policy.org)) to download *Plan B 3.0* free of charge.



## Plan B 3.0: Mobilizing to Save Civilization

Lester R. Brown  
£10.99 (Norton, 2008)



## DVD Earth From Above series Yann Arthus-Bertrand

In our everyday lives we are often cocooned from the reality of the environmental and social changes occurring around us. The result? Complacency and inaction. Fortunately there are individuals such as Yann Arthus-Bertrand, world-renowned French photographer and environmental campaigner, seeking to remedy this.

Filmed in high-definition, *Earth From Above* is a stunning collection of aerial photography that captures the Earth's wonders from a spectacular vantage point. This four-part documentary series takes us on a journey across the continents, providing a unique perspective on environments natural and man-made. The aerial footage is supplemented with a comprehensive commentary on the threats to our fragile planet. Drawing on photographic evidence of previous decades, we are invited to witness the shocking changes that humans are inducing worldwide.

Frequent interviews with the fascinating individuals at the forefront of the environmental movement ensures that a balance is created, giving you every reason to help to ensure this beautiful world we live in is protected. **Susie Sell**

## Last words? Washo

**Status:** Highly endangered – just a handful of elderly speakers left, but also a few youngsters trying to revitalise it.

**Habitat:** Around Lake Tahoe and the Carson and Truckee river basins on the California/Nevada borderlands, USA.

**Description:** One of the most intriguing things about the long roster of languages (most of them now dead or dying) that once sounded across the vast North American continent is how many are language isolates – unrelated to any other tongue – or members of distinct linguistic groups. These communities must have remained relatively cut off for hundreds or thousands of years, while their unique cultures deepened and their languages grew better and better at describing the world around them. A language that has been somewhere for a long time becomes a mirror of that place. Words become things – the barriers between meaning and meant, signifier and signified are broken down.

Washo is one of these islands of communication. The name is an autonym meaning 'people from here'; the language encapsulates an intimate relationship with its speakers' ancestral home. The Washo Indians were nomadic hunter-gatherers who lived by the seasons. Yet their 9,000 years of history were swept aside in a relative instant, as their territory lay in the path of gold-prospectors, explorers and [un]settlers.

A lone and dedicated linguist, William H. Jacobsen Jr, has spent a large part of his life documenting Washo. But, as in many other parts of the world, the cultural and linguistic hegemony of English had already pushed this indigenous language to the margins, a place from where it can never recover or recolonise. It may be inevitable, it may be a necessary by-product of the advance of 'civilisation', but every language lost is a small lobotomy for universal human consciousness.

**David Hawkins**

# How to be free

## Brave new world

The language of the natural world is gradually being buried beneath a layer of artificiality. **Tom Hodgkinson** remembers when a spade was called a spade

**E**ver since the Enlightenment, man has been striving to tame nature and replace it with his own creations. Air-conditioning does away with pesky extremes of temperature. Drugs like Prozac squash natural melancholy. Viagra overcomes certain age-related problems. Central heating means we no longer need to chop wood. The automobile protects us from the elements in a way that walking or horse travel could not.

The latest salvo in the takeover bid from the artificial world has been its shameless theft of the language of nature. When Radio 4 asked last autumn whether I would appear on a programme to talk about blackberries, I first assumed they were talking about the delectable fruit of the bramble, which I had just been collecting in the hedgerows.

But no. They wanted to discuss the new BlackBerry, that costly digital manacle and badge of voluntary slavery to the workaday world. Oh sad day, when the technological world can actually change the meaning of words – steal them, really.

There are other examples. Apple was once a crunchy fruit and now is a computer. Orange used to be a colour and a Mediterranean fruit. Now it is a mobile phone network. In one absurd development, we find an Orange BlackBerry for sale. O2 used to be the symbol for oxygen. Now it too is a mobile phone network. Amazon used to be a member of a mythical tribe of women and is now a mail-order company. Kindle used to be a verb meaning to set on fire; now it is the name of a ridiculous attempt to reinvent the book for the electronic age. In earlier times we had Pear's Soap, while Caterpillar, once the humble grub of the butterfly, is now one of the world's top 100 clothing brands. Then there's the Rolex Oyster, and indeed the Oyster card for use on London's tubes and buses.

The bird world may be under attack next. I suppose the thrush and the blue tit will be

safe from the branding men, but we've already lost the kestrel to a make of lager. Whither the buzzard, owl and parrot? On the seashore, Shell Oil stole the shell a long time ago, but pebble, crab, lobster, barnacle, limpet, shrimp and anemone remain, I think, untarnished. The tuna has been exploited by the Hot Tuna surfwear label, and am I right in thinking Dolphin the name of a shower company? Everest, of course, is a double-glazing firm.

Back to the world of fruit and vegetables, where Tomato has been taken by a design company. I believe the cucumber and pumpkin

are safe, though I may be wrong. Parsnip and radish have not yet been appropriated, and potato, turnip and beetroot retain their original meanings. But for how long?

The oak, ash, elm, birch and beech are still safe, although the fruit of the oak, the acorn, which used to be a computer company, now lends its name to a New York housing co-op and a London estate agent, as well as a firm selling sheepskin slippers.

Just to avoid confusion, I suggest we put the word 'infernal' in front of any commercial plagiarism from nature. So we will get the 'infernal BlackBerry', 'infernal Orange', 'infernal Amazon' and 'infernal kindle'. This way we will register our protest against artificiality's thieving from the natural world.

It all adds up to a slow retreat from nature. In Aldous Huxley's *Brave New World* (1932), the separation from nature is almost complete. There are no mothers or fathers, virtually no illness, and when you are feeling low you simply pop a couple of 'soma' tablets. As a result, people are squeamish in the extreme and nature is something to be viewed from helicopters rather than lived in.

As Mustapha Mond, the Resident Controller for Western Europe, explains to the rebel Bernard Marx, the new society replaced truth and beauty with comfort and happiness. Nature has been bettered by machines and we no longer have to get muddy or cold or wet if we don't want to. For recreation, the inhabitants of *Brave New World* play electromagnetic golf and centrifugal bumble-puppy. It's a sterile, danger-free environment, profoundly uncreative, completely disconnected from nature, free of art, free of books and where the people are highly conditioned and have been made to learn to love their slavery. Sound familiar? **E**

**Tom Hodgkinson is the Editor of *The Idler* and author of the book *How to be Free* (Hamish Hamilton, £14.99)**



'When Radio 4 asked me to appear on a programme about blackberries, I first assumed they were talking about the fruit of the bramble'

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