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Hard times in the Australian dustbowl

DAILY LIFE SECTION
27 PAGES OF INSPIRING IDEAS FOR GREENER LIVING

ECOLOGIST DECEMBER/JANUARY 2009

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ECOLOGIST

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Sustaina-bull

There was a time when sustainability was a laudable concept. Today it is often a sales gimmick. Tag the word 'sustainable' on to anything and it becomes a niche commodity, a way to gain advantage in an increasingly competitive marketplace.

The travel business is a good case in point. You can hardly open a newspaper or magazine without seeing articles and ads for eco travel. Often these involve flying to some far-flung pristine environment to 'experience' nature (in our darker moods in this office we call it 'nature porn'). As Paul Miles points out in his article (page 14), tourism can sometimes be a force for good, but often only over the short term. This is because tourism is first and foremost a business, and over the long term, governments in prime tourist destinations are often more interested in maintaining tourist economies than ecosystems, even if it means unsustainable development, environmental destruction, displacement, cultural conflicts and unacceptable working practices

Much the same can be said of the fish farming trade. The notion of 'sustainability' and saving rare and under-pressure species is often invoked as a good reason to breed the 'tigers of the sea', such as salmon and even tuna, in cages. This month's investigation into the salmon feed industry (page 24) illustrates the unsustainability of a practice that scours the seas clean of small fish, ploughs under rainforest to grow soya and deprives local people of their livelihoods. With farmed fish there are other issues too, of course: animal cruelty, overcrowding, stress and the need forcefully to inject these captive carnivores with hormones to get them to breed in confinement. It also challenges some of our notions of 'local is best'. In the UK, Scottish farmed salmon could be considered 'local' – but is it really sustainable?

The word 'sustainable', like 'organic', 'natural' and 'eco', has been co-opted by marketers to the point where it is in danger of losing all meaning. Yet sustainability is not just a marketing tool: it is a keystone concept in environmentalism. It's the complex concept that drives most of our disagreements with business, with NGOs, with each other – and even with friends. It requires a kind of double vision to see the big picture and the tiny detail simultaneously, and the courage not to become paralysed by that paradox. As a new year approaches, my hope is that we can all keep moving forward and embrace those difficult but necessary changes that make our lives, and our world, truly sustainable.

● This month's edition includes a reader survey, which we hope you will take the time to fill in. Your feedback is valuable to us and helps us to understand what you like and don't like about the *Ecologist*. The survey is included as a loose insert inside the magazine with a freepost address, and filling it in automatically enters you into a prize-draw for a fabulous organic hamper from GoodnessDirect.co.uk. For more details, go to page 73.

NEW ADVERTISING POLICY The *Ecologist* advertising policy is changing. From this edition we have opened our doors to more companies that, through their green product ranges, are seeking to expand the market for more environmentally friendly products and services and/or to promote green practices through their businesses. Our new advertising policy, which also embraces 'best in class' companies and services, is a recognition of these efforts that allows us to carry on giving readers the same quality magazine that they have enjoyed for many years.



Sustainability is not just a marketing tool: it is a keystone concept in environmentalism

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the final frontier?

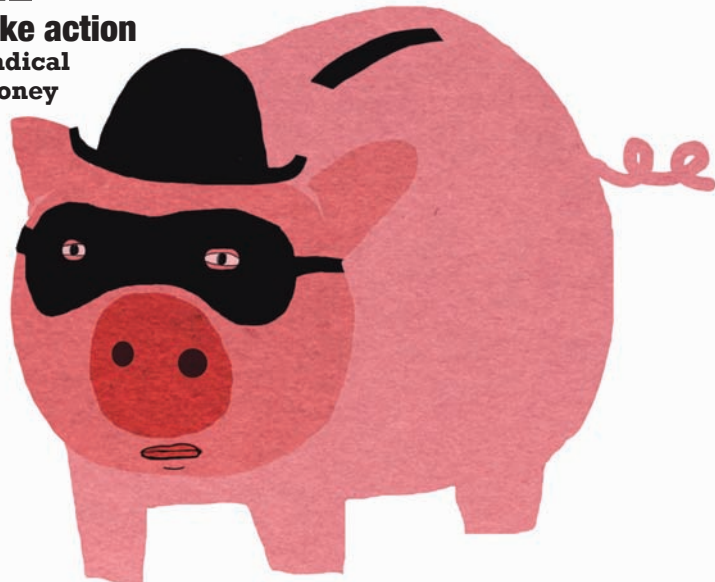


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local hero
Karen Lubbock

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The only question: when?

Widely varying estimates as to when our oil supply will begin to run out only makes the situation more urgent, say experts and industry at launch of new report on peak oil

This graphic (right) shows predictions for our global oil supply, calculated by a number of leading organisations.

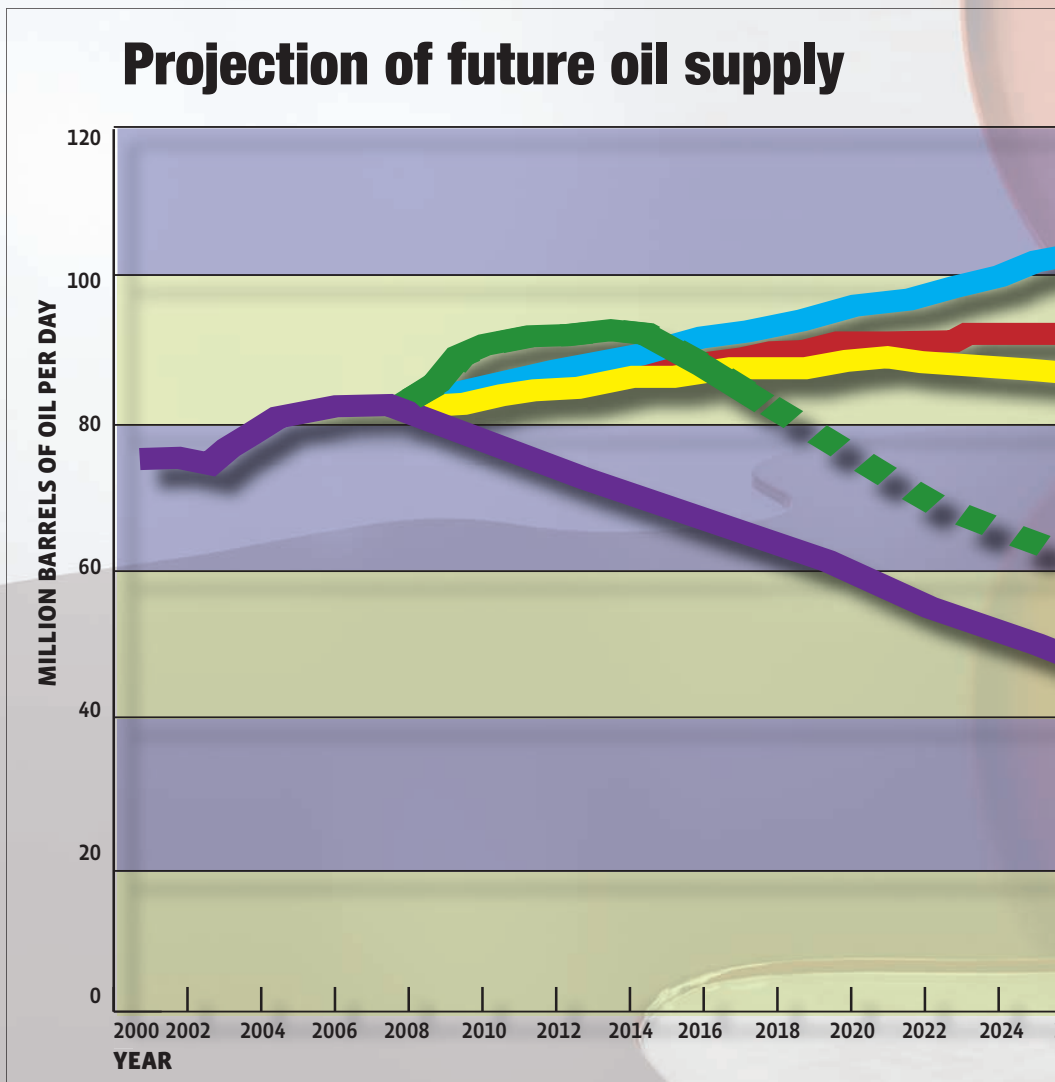
They range from the International Energy Agency's recently published World Energy Outlook – from which the UK Government derives its energy policy position – to the 2007 report by German NGO Energy Watch Group. The former sees a steady increase in oil supply until at least 2030, while the latter calculates that supply has already 'peaked' and will now decline sharply and irrevocably.

The starkly different assessments, which include two new projections by oil giant Shell and a recently formed UK industry group, highlight the extraordinarily optimistic position adopted by the International Energy Agency and its supporting governments – a position many believe is no longer tenable.

At the launch of the UK Industry Taskforce on Peak Oil and Energy Security (ITPOES) report, leading industrialists and campaigners called for the Government to take notice of the fast-forming consensus on the nearing peak in world oil supplies. Will Whitehorn, president of newly formed space tourism agency Virgin Galactic and a representative of Virgin's transportation network, described the ITPOES study as 'conservative' by some standards:

'Even with the most optimistic estimates we are going to come to an oil [supply] peak in the next few years,' he said. 'If this report is not heeded, our economy will become dislocated and difficult to manage. The Government has to come clean with the public and say that this is an issue we have to deal with.'

Former oil industry expert and solar energy entrepreneur Jeremy Leggett said the report should 'activate' governments: 'We hope this report will be taken very seriously. Five years ago, the credit crunch would have been unthinkable. Could we have softened the blow if we had known about it? I don't know, but with this [oil]



crisis, we have three to five years in which to engineer a soft landing, while at the same time dealing with climate change'.

Even energy giants are putting their heads above the parapet on peak oil. Ian Marchant, chief executive of Scottish and Southern Energy, said cheap oil was 'over', and asked, 'how do we use the oil we have left for the best purposes?' Former Shell chairman

Lord Oxburgh said the views in the report, which might once have been regarded as 'heretical', were now warnings 'to be heeded'.

Whitehorn cautioned against celebration of the findings by environmentalists, though, warning oil would be needed to 'lubricate' our transition to a low-carbon economy, and that if 'unconventional oils', such as bitumen-rich tar sands, could be exploited



NEWS ROUNDUP

INSIDE THIS MONTH...

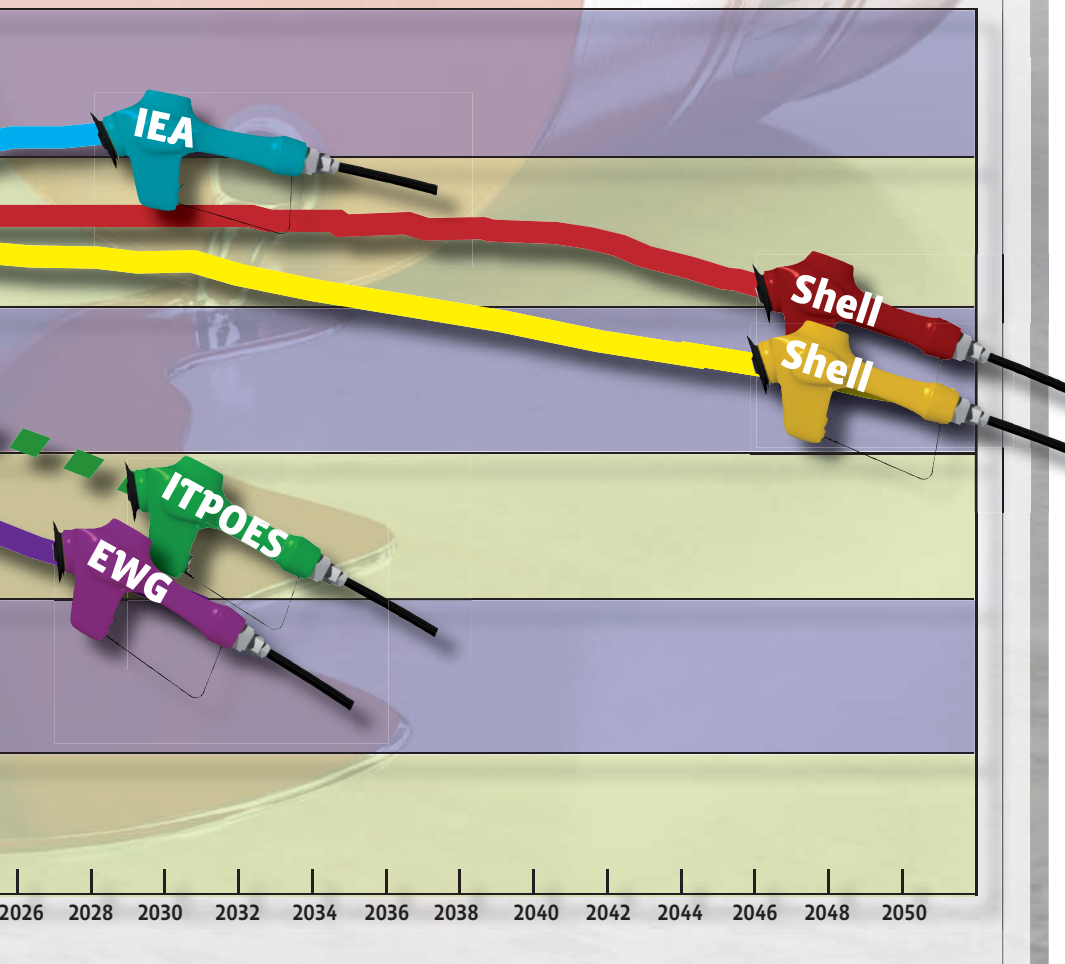
- Nuclear consultation flawed (again) p8
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ON THE WEB

Some of the key environmental stories from the past month that you may have missed. Visit www.theecologist.org/news to read and follow-up...

- » US scientists discover genes from genetically modified maize in native, undomesticated maize-relatives
- » Nuclear power goes small: scientists outline plans for neighbourhood-sized plants and nuclear-powered aircraft
- » Shake-up needed in Government renewables strategy, says House of Lords EU sub-committee
- » The family that prays together... isn't always the greenest. Nuclear families are carbon sinners too, report reveals
- » By treating crops as a commodity, 'we blew it', says Bill Clinton in attack on the World Bank and IMF
- » What do Yorkshire and California have in common? Both are preparing regional carbon trading schemes
- » Renewable energy expert says that the Government will need to make insulation a legal requirement
- » Incinerators aren't needed, official waste statistics from Defra show: they are just dirty and expensive
- » Living under electricity pylons can double the risk of developing dementia, says peer-reviewed research

IEA (World Energy Outlook, 2008) ■ Energy Watch Group ■
 Shell Optimistic scenario ■ Industry Taskforce on Peak Oil (ITPOES) ■
 Shell Pessimistic scenario ■ ITPOES Extrapolation ■ ■ ■



without exacerbating the climate crisis then such a course might be justified.

Leggett was less enthusiastic, suggesting that carbon capture and storage technology should be mandatory for any company wishing to refine crude oil from tar sands or coal, and pointing out that China has recently pulled funding from efforts to turn its vast coal reserves into petrol and diesel.

The concluding sections of the ITPOES report draw heavily on solutions proposed by the Centre for Alternative Technology in its 2007 'Zero-Carbon Britain' report. It recommends a shift to electric vehicles and a massive expansion of wind, tidal, solar, combined heat and power and biomass.

To read the ITPOES report, visit <http://peakoil.solarcentury.com>

NEWSLETTER

See www.theecologist.org

» Weekly news, exclusive web articles, images, videos, podcasts and previews of content from the magazine, our weekly e-newsletter is vital reading for those who can't wait for the next edition...

Toxic market research

A bungled market research exercise leads to Government being decried as 'not even competent enough to rig its own consultation'

The market research company employed by the Government to canvas the public's opinions on a new generation of nuclear power stations has been found in breach of industry guidelines by framing questions to 'lead' people towards desired responses.

Prompted by an official complaint from Greenpeace, the Market Research Standards Board (MRSB) censured research consultancy Opinion Leader for failing to take: 'the reasonable steps required of them to ensure that stimulus materials were accurate, balanced and comprehensive overall', or create an 'audit trail' that would have ensured 'respondents were not led towards a particular answer'.

The MRSB concluded that a formal publication of its ruling was justified because 'this was not a minor or trivial breach'.

Opinion Leader was engaged by the Government to lead a second public consultation on nuclear power in September 2007, after its first was denounced as a 'sham' in a landmark High Court ruling six months earlier. Environmental

NGOs were invited to contribute to the new consultation, but were met with openly pro-nuclear Government officials and documents containing 'pro-nuclear opinion masquerading as fact', according to one Friends of the Earth energy expert (see *News*, November 2007). According to Channel 4 News, 20 academics have also supported the NGO's reservations.

Greenpeace subsequently filed a complaint with the MRSB, which took 13 months to reach a decision. In its ruling, the MRSB also criticised Opinion Leader for allowing its client, the Department for Business Enterprise and Regulatory Reform (BERR), to review comments from the NGOs and suggest its own amendments without subjecting these to any form of external examination to ensure they 'were not simply the client's [BERR] own assertion or interpretation'.

In a 30-page complaint, Greenpeace highlights how 'stimulus materials' were structured to elicit responses favourable to nuclear. They range from colouring nuclear

and renewable options green, and coal, oil and gas blue, to claims that 'nuclear power is substantially cheaper than wind generation', when the Government's own Performance and Innovation Unit has published research showing that the cost of wind energy is competitive with, or cheaper than, nuclear.

The stimulus materials also imply that solutions already exist for dealing with nuclear waste, whereas in fact no government has yet settled on a plan for secure waste disposal, and selectively quote from the Government's Sustainable Development Commission – highlighting the advisory group's findings where they appear to support the safety of nuclear power, but ignoring its overall conclusion that the disadvantages of atomic energy outweigh its advantages.

Opinion Leader, until recently co-chaired by Gordon Brown's personal pollster, Deborah Mattinson, reacted angrily to the ruling, taking the extraordinary step of accusing its industry body, the MRSB, of not being 'competent to assess these new forms of deliberative engagement', and objecting to a complaint lodged by an 'environmental activist group'.

Lib Dem shadow energy and climate change secretary Steve Webb said it was no secret the Government had merely been 'going through the motions' in its research. 'This ruling shows the Government isn't even competent enough to rig its own consultation,' he added.



Green spaces make us slim and healthy

A flurry of new reports has confirmed what we all suspected: green spaces make us feel better and live healthier lives.

Research by public health researchers at the University of Glasgow found that in areas with the greenest environments, the health gap between rich and poor was half as big as that in the least green areas.

The study's lead author, Dr Richard Mitchell, said that access to green spaces encouraged people to take part in activities that reduced stress and blood pressure.

'The implications are clear: environments that promote good health might be crucial in the fight to reduce health inequalities,' he said. 'We would encourage the Government to consider carefully what its policy on green space is, and to bear this research in mind

when planning urban areas for the future.'

A separate study found that children living in greener neighbourhoods put on less weight than those living in more developed areas.

The extensive research, published in the *American Journal of Preventive Medicine*, followed 3,800 children over a two-year period. The scientists found a significant relationship between body mass index (BMI) and access to open spaces.

But the effect of green spaces may also have a significant impact on mental health. Researchers writing in the *Journal of Attention Disorders* found that children with Attention Deficit Hyperactivity Disorder (ADHD) were better able to concentrate after a 20-minute walk in a 'natural setting'. Most interestingly, when the team quantified the

impact of the walk on the children's concentration, they discovered that it was as or more significant than a dose of medication.

'This study tells us physical environment matters,' said author Frances Kuo, describing the findings as 'completely new'. 'We don't know what it is exactly – the greenness or lack of buildings – that seems to improve attention, but the study tells us that even though everything else was the same... We just changed the environment, we still saw a measurable difference in children's symptoms.'

There is still much work for town planners and developers to do, however, if the results of a National Trust survey are heeded. The environmental organisation found that one in four people in urban areas of the UK suffers from 'green place poverty' – meaning they have access to two or fewer green spaces.

On average, UK citizens have access to between three and six green places.

China's reliance on coal costs it £160 billion a year as a result of pollution, emissions and mining accidents, reveals green energy report *The True Cost of Coal*

WHICH IS GREENER: DISPOSABLE OR REUSABLE NAPPIES? IT ALL DEPENDS ON HOW YOU WASH THEM...

DISPOSABLE NAPPY (USED ON ONE CHILD OVER TWO AND HALF YEARS)	REUSABLE NAPPY (USED ON ONE CHILD OVER TWO AND HALF YEARS)
570kg CO ₂ (e)	Washing all nappies at 90°C; tumble-drying all nappies = 992.8kg CO₂(e)
	Tumble-drying all nappies = 815kg CO₂(e)
	Washing all nappies at 90°C = 750kg CO₂(e)
	Average washing and drying behaviour = 569kg CO₂(e)
	Reusing nappy set on second child = 535kg CO₂(e)
	Average behaviour, but using an A+ rated washing machine and an A-rated drier = 520kg CO₂(e)
	Line-drying all nappies outside = 478kg CO₂(e)
	Washing nappies with rest of laundry = 475kg CO₂(e)
	Reusing on second child; washing nappies with other laundry; line-drying outside = 342kg CO₂(e)

Environment Agency, 2008, 'An updated lifecycle assessment study for disposable and reusable nappies'

IN BRIEF

Organic could feed Africa

The contribution that organic farming could make towards increasing the yields of small African farmers may be 'far higher' than many have supposed, the UN's Environment Programme (UNEP) has said.

In a report that examined the effects of organic or near-organic conversions in East Africa, UNEP found that in 90 per cent of cases soil fertility, water tables, carbon sequestration and biodiversity improved. Yields went up 128 per cent.

Organic methods were described as 'ideally suited' to African smallholders. See <http://tinyurl.com/69wltc>

Major pesticides victory

Pesticides campaigner Georgina Downs has won a major High Court victory after a judge ruled that Defra had failed adequately to protect the public from the effect of exposure to pesticide sprays.

The culmination of a seven-year campaign, the ruling finds that Defra's method for assessing public exposure to pesticides – the so-called 'bystander model' – fails to protect rural residents, who can receive multiple doses of different chemicals throughout the year and over a long period of time.

Defra may still appeal the judgement.

Tackle super-polluters

You don't need to wait for a whole new set of laws to tackle urban air quality, say scientists at the University of Alcalá, in Spain – just get the worst offenders off the road now. Doing so could reduce particulate air pollution by 25-48 per cent, the researchers claim. Spotting these 'super-polluters' would be easy, too – 'when they accelerate or climb a hill, a cloud of smoke comes out of the exhaust pipe', says physicist Philip Siegmann.

More at <http://tinyurl.com/58uex4>

Will justice be done?

Nineteen Nigerian villagers whose land has been polluted by Chevron have taken the oil giant to court in San Francisco.

Chevron, which also stands accused of murder and torture, for hiring soldiers to fire on peaceful protestors, is the first US company to be held liable in US courts for crimes committed overseas.

Meanwhile, a suit against Dow Chemicals, which owns Union Carbide – the pesticide company that killed 3,800 people in 1984 after a toxic gas leak from its Indian plant – has been reinstated in New York. The plaintiffs argue that the gas leak contaminated water supplies in the area, which caused residents to suffer cancers and neurological damage.

EC in bed with big business

Campaign group Corporate Europe Observatory (CEO) staged a mock wedding ceremony outside the Brussels 'Going Global' conference in October, hosted by industry lobby group BusinessEurope, to protest at what it describes as a 'love-in' between the European Commission and Big Business.

Olivier Hoedeman, a campaigner with CEO, said: 'The Commission seems to be so intimately involved with business lobbyists that it has given them privileged access in putting together the Global Europe strategy. The result is a trade policy that prioritises Big Business at the expense of almost every other sector. It is the world's poorest, the

environment and society paying the price.'

The Global Europe strategy is designed to open up markets in less industrialised nations to European companies, as well as to make those countries' raw materials easily accessible to foreign businesses. In a recent report, CEO argues that this is being done with no thought as to the impact on the EU's trading partners, who will find themselves restricted in 'determining their own development model, protecting their environment and even providing assistance to their own people'.

CEO has also joined with Friends of the Earth Europe to host the 'Worst EU Lobbying Awards 2008', which was busy collecting votes as the *Ecologist* went to press to decide who out of the biofuels lobby, the International Air Transport Association or the European Alliance for Access to Safe Medicines, had run the most environmentally or socially destructive lobbying campaigns of the year.

Meanwhile, the *Independent on Sunday* newspaper has revealed that a number of EU leaders, in co-operation with the European Commission, are preparing to help biotechnology companies to combat the opinions of 'vested interests' such as environmentalists when it comes to GM crops.

The biotech industry has boasted of having 'excellent working relations' with the European Commission, the paper reports.



Till death us do part... NGOs say that the EC and Big Business are far too intimately connected

PHOTOGRAPH: ALEXANDRESERON.BE

Pro-GM arguments fail to hold water

Arguments used by those in favour of GM technology and attempting to encourage its adoption are being consistently undermined by new research.

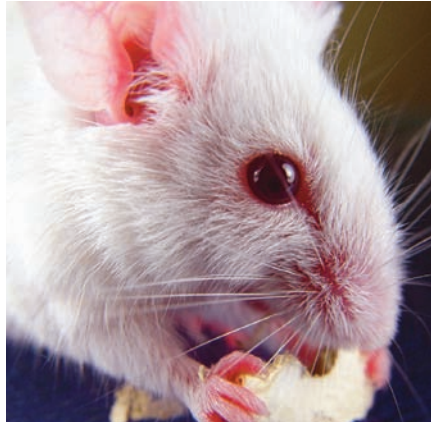
In October, a report produced by industrial farming groups claimed that European Union delays in authorising new breeds of GM crops for use as animal feed is costing Europe's livestock sector €2.5 billion each year.

The study, which was sent to European Commission president José Manuel Barroso, claimed that strict regulations for the level of GM contamination in grain shipments had led to effective bans on certain imports, and that the situation was set to get worse as US growers shift to new varieties of GM soya bean that have not been approved by the EU.

But research by US geneticist Dr John Fagan, presented at an Organic Research Centre conference in November, uses government and industry data to argue that, although non-GM feed is more expensive, the difference between the two is marginal compared to the wide price fluctuations in the animal feedstock market.

Fagan's report also presents remarkable on-farm data, collected in the US and

Germany, which suggests that animals may turn non-GM feed into meat more efficiently than they do with GM alternatives, meaning that price differentials are outweighed or even reversed. One table in Fagan's report presents figures indicating that, while broiler chickens need to be fed 2.55-2.75kg of GM feed to put on 1kg of weight, the same breed needed only 2.3-2.5kg of non-GM meal to



New research shows that mice fed on genetically modified maize produce smaller, lighter litters

make the same weight-gain. Fagan concludes that the difference is sufficient to make non-GM feed ultimately more cost-effective.

A similarly embarrassing situation has arisen following the ruling of the European Food Standards Authority (EFSA) that the French ban on Monsanto's MON810 GM maize – initiated by President Sarkozy following environmental concerns – was not justified in light of current scientific evidence.

Less than a fortnight after the EFSA's ruling, new research was released by scientists at the University of Veterinary Medicine in Vienna, showing that mice fed maize containing the MON810 genes produced a smaller third and fourth litter, with lighter offspring, than those fed with non-GM maize.

The lead author of the study, Professor Jürgen Zentek, said that the research underlined the need for all future GM safety studies to evaluate the technology's impact on reproductive function.

The paper is particularly significant because it is the first peer-reviewed publication to show a direct negative health effect of GM maize. To access the paper, see <http://tinyurl.com/6s5rct>

The cost of a call

New phone for Christmas? Spare a thought for those who made it.

In a new report, the European campaign group Make IT Fair reveals that handset components for large manufacturers such as Nokia, Sony Ericsson and Apple are made by workers paid below a living wage, forcing them to work long overtime hours.

During busy periods, workers in one factory were expected to work weekends, and in one case staff who did not fulfil production quotas had to work 'voluntary' overtime without premiums.

The researchers found evidence of wage

deductions made on 'subjective' or 'unjust' grounds in all four factories examined in China. In one case, staff who regularly worked 13-hour shifts, six days a week, were fined for mistakes or falling asleep.

The report claims that many factories prefer to recruit young women because they are seen as less disruptive, and are 'better suited for detail-oriented work'. Managers prefer to break up social groups or friends who migrated to an area together to reduce chances of worker solidarity. Several factories forbid workers to unionise and any strikes can be dealt with ruthlessly, often with police aid.

Workers claim the speed with which they are required to fulfil quotas means health and safety protocols are ignored. Staff using sulphuric acid baths to make printed circuit boards say they do not have time to fit safety masks, while others say toxic chemicals penetrate their gloves.

Several factories have promised to improve conditions, and the mobile phone manufacturers they supply have pledged to inspect the factories in question, though Make IT Fair say most audit only the surface of their supply chains.

Colombian killing

A Colombian community leader who fought for subsistence farmers' rights has been assassinated by paramilitary soldiers while under government protection.

Hours before his murder, Walberto Hoyos Rivas had been called to give evidence at a trial of two paramilitaries accused of a similar killing in 2006. In 2007 he was placed under the protection of Colombia's Ministry of Interior and Justice following an unsuccessful assassination attempt. On the day he was killed he was undefended as his bodyguard's car had broken down.

Walberto is the best known of three community leaders murdered in October, all active in fighting the continuing growth of agribusiness in the country.

Paramilitary activity has increased in the two years since a Free Trade Agreement was reached between Colombia and the USA, despite the proposal receiving a 98 per cent 'no' vote in a referendum.

In early October, farmers organised a mass march upon the capital Bogotá to protest against the agreement. Clashes with police led to the deaths of several protesters, with more than 100 injured.



PHOTOGRAPH: ALEXANDRESERON.BE

'We have not evolved to cope with plenty. In the face of plenty, we are rather like foie gras geese who eat and eat and eat until our internal organs explode'

Matthew Taylor, chief executive of the RSA

FSC faces forest backlash

A fierce debate continues to rage within the environmental movement as to whether the Forestry Stewardship Council (FSC) is effective in protecting the world's forests.

FSC-certified logging operations, timber and wood products have until recent years been seen as the 'gold standard' by industry and shoppers alike.

But concerns the FSC is becoming too free with its certificates and handing them to controversial commercial logging operations came to a head last March, when online environmental group Ecological Internet began an email campaign accusing established green NGOs such as Greenpeace and WWF of being 'forest liars' who were greenwashing the FSC's practices.

As a result, in September 2008, Friends of the Earth UK published an internet disclaimer saying it would 'support a review' of the FSC scheme and could not recommend the standard until any changes had been implemented.

In October, US NGO the Rainforest Action Network (RAN) wrote to the FSC demanding that it provide data showing what proportion of its certified timber was felled in primary (untouched) or old-growth (more than 200-year-old) forests. The move was seen by campaigners as a shift in RAN's previously supportive stance towards the Council.



The FSC counters that in order to be effective as the demand for timber grows, it is forced to work with industrial logging companies and allow the sustainable cutting of old-growth and primary forests.

The organisation argues that allowing logging places an economic value on the forest ecosystem, which in turn helps avoid the ground being clear-cut for pasture or crop monocultures. But

critics, such as veteran forest campaigner Simon Counsell of the Rainforest Foundation UK, say 'valuing' forests in this way doesn't guarantee their protection.

'The old "use it or lose it" argument has long been favoured by the forest industry,' Counsell told eco news website Mongabay earlier in the year. 'The problem is that almost nowhere does it seem to be true. Industrial-scale logging in tropical rainforests, [as] it is mostly inherently ecologically unsustainable, is almost always succeeded by complete clearance of the land.'

Counsell adds that because the FSC certifies individual forestry projects, it often fails to see the joined-up effect of multiple logging concessions on whole ecosystems.

WWF and Greenpeace remain firm supporters of the Council, however. The latter's October report, 'Holding the Line with FSC', is seen as a clear endorsement.

30 years ago

For some years now, villagers living under the high-voltage pylons that straddle the small hamlet of Fishpond, Dorset, have been complaining of chronic headaches, eye-strain, blackouts, exhaustion, depression and even blood-cell disorders. Their claim that these ills are caused by the electromagnetic fields created by transmission lines is supported by a growing body of evidence from the USSR and elsewhere.

Predictably, the Central Electricity Board scoffs at the suggestion, dismissing it as the private neurosis of a few cranks. Yet scientists in the USA now warn that 'electrical smog' – generated by power lines, television transmitters, radar stations, microwave ovens and a host of other electrical devices – is a possible cause of cataracts, birth defects, genetic damage, decreased fertility and cancer.

Last year, Paul Brodeur, author of *The Zapping of America*, further fanned the flames of controversy by accusing the Pentagon, together with the electronics and communications industries, of being involved in a massive cover-up of these dangers. What then, are the effects of low-frequency radiation? And why have both government and industry shown such a calculated lack of interest in them?

Nicholas Hildyard, 'Overexposed!', *The New Ecologist*, Jan-Feb 1979



Climate stakes are raised, but scientists call for swift action

Hopes for concerted action on climate change – raised by the UK Government's new and improved Climate Change Bill – have been balanced by stark new warnings.

In October, WWF released a report arguing that the 2007 Intergovernmental Panel on Climate Change (IPCC) assessment was now out of date and lulling the world into a false sense of security. By presenting the results of scientific studies published after the IPCC's cut-off date of early 2007, the environmental group said climate change was accelerating

far beyond the panel's forecasts.

The report's author, Dr Tina Tin, said that a global commitment to an 80 per cent emissions cut by 2050 meant that the EU would have to be carbon-neutral by then to reflect its considerable past emissions.

WWF's warning over the scientific 'lag' inherent in IPCC forecasts was compounded by Nobel Prize-winning physicist and biologist Dr Steve Chu, who told the new Copenhagen Climate Council the IPCC report understates the problem and is 'a conservative document'.

And in November, Australian economist Professor Ross Garnaut published a 600-page economic and environmental report, in which he warns that the international community has underestimated the effort necessary to deliver on its pledged climate change targets, and says that governments are now 'too late with effective mitigation to avoid significant damage from climate change'.

He warns that making decisions on how to adapt to climate change will 'test humans and their values and preferences in profound ways'.

Farmer warns: 'GM will destroy organic industry'

He battled Monsanto over crop contamination, now crusading farmer Percy Schmeiser issues a stark warning: UK organic farming cannot survive alongside GM. **Mark Anslow reports**

Canadian farmer Percy Schmeiser, who shot to fame in 2000 during a protracted series of court battles with biotechnology company Monsanto, told a lecture audience in October that cross-contamination from GM crops in Canada is now so extensive that if they were introduced on a wide scale in Europe, organic farming would become impossible.

Speaking at a lecture organised by the Gaia Foundation in London, Schmeiser said that cross-contamination in Canada is now so extensive that it is almost impossible to buy non-GM rapeseed in the country.

Schmeiser's own brush with contamination from GM crops began in 1997, when he found Monsanto's plants growing in a ditch beside his field, which he was able to identify because they did not die when he sprayed them with the company's herbicide, Roundup.

Suspicious that the contamination might extend beyond the ditch, Schmeiser tried the same test with his adjacent field of oilseed rape, and discovered that approximately 60 per cent of it contained Monsanto's variety.

As a plant breeder himself, Schmeiser was anxious not to lose a crop that was a painstakingly crossbred variety developed over 40 years. He asked a farmhand to harvest the contaminated crop and store it separately. The following year – whether by accident or by design is contested – the same seed was used to sow Schmeiser's entire crop.

Monsanto received a tip-off that Schmeiser might be growing their GM oilseed rape and sent investigators to sample the edge of his field. They claimed subsequent tests indicated contamination rates of up to 98 per cent, and the company sued for patent infringement in growing its crops without a licence.

As the case unfolded, clear inconsistencies arose around the samples of crops taken from Schmeiser's fields. Monsanto's showed high contamination rates, whereas Schmeiser's own, tested by the University of Winnipeg, were much lower – around 70 per cent.

Schmeiser claimed the samples taken from his fields by Monsanto's investigators bore grid reference numbers that did not correspond to land he owned or farmed, but his evidence was

not considered in the trial. He also said he had later met an employee from a local mill that supplied Monsanto with a sample of his seed, who admitted supplying a false batch.

Schmeiser lost the case, and was ordered to pay damages and court costs totalling millions of Canadian dollars. He appealed the decision and lost again, by which time his own legal fees were well in excess of C\$300,000 and he had multiple mortgages on his land.

In 2004, Schmeiser obtained a hearing at the Canadian Supreme Court, where his lawyers argued that because he hadn't sprayed Roundup herbicide on the crop, he had not 'used' the genetic modification within the



Monsanto maverick: Percy Schmeiser

plant. The court dismissed this argument and upheld Monsanto's exclusive right to any organism containing its patented genetic material, however it got there. In a personal victory for Schmeiser, however, the court ruled he did not have to pay damages as he had not financially benefited from the contamination of his crop.

In his lecture, Schmeiser maintained that Monsanto's stance had always been one of bullying and intimidation. He explained how company operatives used to watch him and his wife from vehicles parked on the roads near their farm, and how they received threatening phonecalls. Monsanto initially tried to suggest Schmeiser had stolen its seed from someone who was licensed to grow Roundup-ready

oilseed rape, but dropped the charge when it emerged there was no evidence to support it.

Further attempts to keep Schmeiser quiet occurred in 2005, when he informed the company that some of its plants had again appeared in his fields. Monsanto agreed to remove the plants, but asked Schmeiser to sign an agreement form that contained a conspicuous blacked-out paragraph. When Schmeiser demanded to see an uncensored version of the document, he discovered the hidden paragraph contained a gagging clause, forbidding him to speak to the press or ever take Monsanto to court again, no matter what level of contamination occurred in his fields.

Incensed, Schmeiser employed some of his neighbours to pull out the plants by hand then took Monsanto to the local small claims court for the sum of C\$640, which it agreed to pay.

'It hasn't been easy to stand up to Monsanto,' Schmeiser said. 'In fact, it has been a living hell.'

What worries him particularly is the effect Monsanto has had on farming communities worldwide. Farmers are widely encouraged to 'tip off' its operatives if they believe their neighbours might be growing Roundup-ready products without a licence, which Schmeiser says breeds an atmosphere of distrust.

He acknowledges few farmers would have the resources to fight a legal battle similar to his own, and carries copies of the threat letters sent by Monsanto to farmers it believes may be illegally growing its crops (see right). Now operating an advice service for those who fall foul of Monsanto, Schmeiser believes many farmers pay up out of fear on receipt of a letter – and his warning to countries considering relaxing their stance on GM is blunt:

'There is no such thing as containment; there is no such thing as coexistence; there is no such thing as choice. Your yields drop and you end up using three to five times more chemicals. We now have new superweeds in our towns, on our golf courses, in our cemeteries and on our roads. The chemicals we have to use on them contain up to 70 per cent of the constituents of Agent Orange.'

'I have not come here from Canada to tell you what to do – you have a choice – but in two years from now, if you introduce [GM], you can't say "we didn't know".'

Mark Anslow is the Ecologist's News Editor

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By Registered Mail

November 12, 1998

Mr. Edward Zielinski
P.O. Box 1226
Danora (Makado), Saskatchewan

Dear Mr. Zielinski:

As you know on July 22, 1998, Monsanto with the assistance of Robinson Investigation Ltd. conducted an investigation (Investigation) to determine whether you had improperly planted Roundup Ready® Canola in 1998 without being licensed from Monsanto Canada Inc. A copy of our standard 1998 License Agreement (TUA) is attached for your review.

We have completed our investigation and have very good evidence to believe that Roundup Ready canola was planted on approximately 250 acres of land identified as SE 28-30-2, NE 28-30-2 and SE 19-30-2 in violation of Monsanto's proprietary rights.

The planting of Roundup Ready Canola without a license is a serious violation of Monsanto's proprietary rights.

Prior to making any final decision as to what steps we will be taking, and in an attempt to resolve this issue in a timely and economical manner, we are prepared to refrain from commencing any legal proceedings against you subject to the following:

1. You forthwith pay to Monsanto the following sum: $250A \times \$115/A = \$28,750.00$
2. You acknowledge Monsanto has the right to take samples from all of your owned or leased land and storage bins for three years from the date of this letter.
3. You agree not to disclose the specific terms and conditions of this Settlement Agreement to any third party.
4. You agree that Monsanto shall at its sole discretion have the right to disclose the facts and settlement terms associated with the Investigation and this Settlement Agreement.

Acceptance of this offer will be acknowledged by forwarding to Monsanto a certified cheque for \$28,750.00 and a duplicate signed copy of this letter by December 14, 1998.

Yours truly,

MONSANTO CANADA INC.

Keith A. MacMillan
Director, Legal Affairs

READ AND AGREED TO THIS _____ DAY OF _____, 1998.

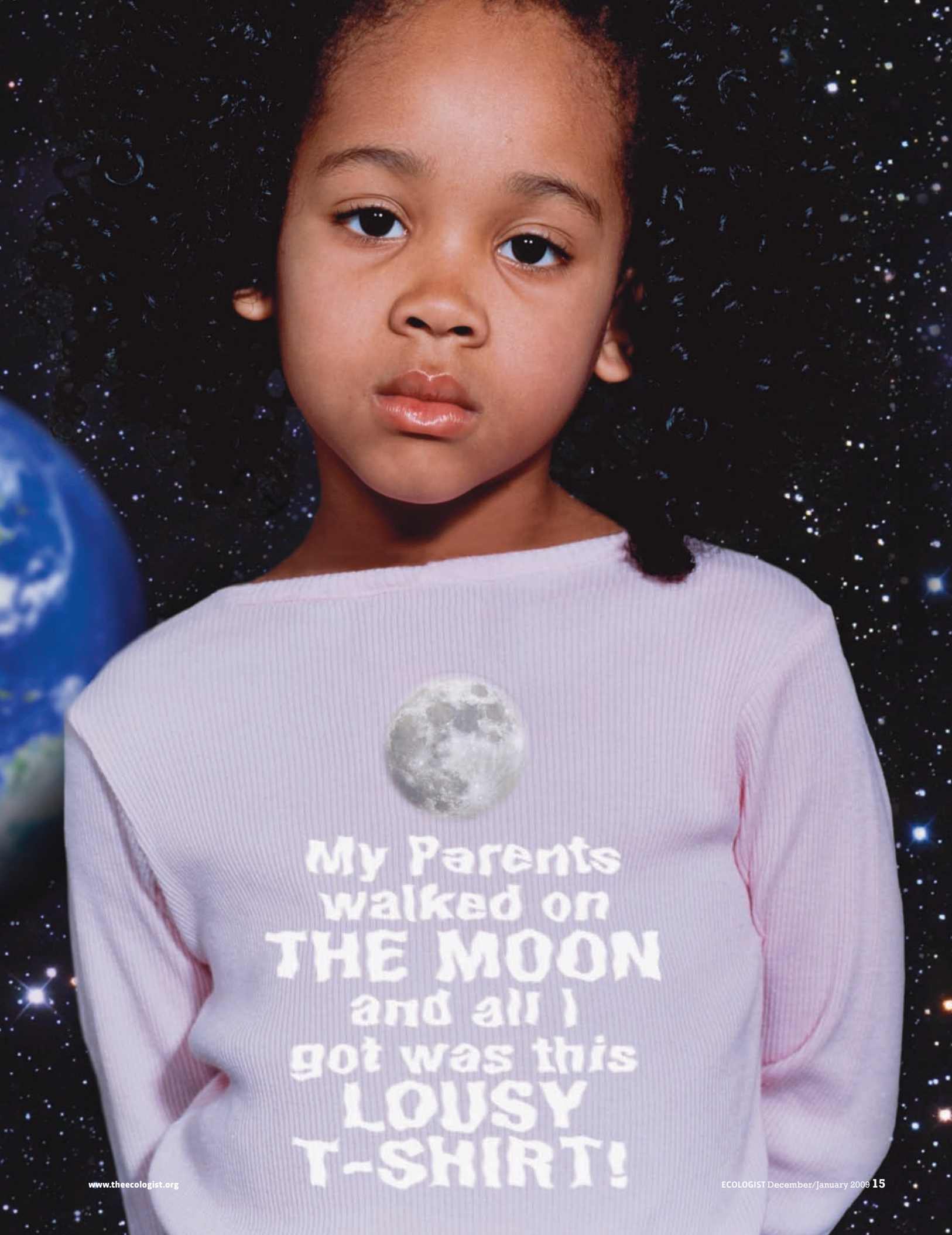
SIGNED: _____

NAME: _____

The 'threat letter' Monsanto sends to farmers it believes are illegally growing its crops. Schmeiser says many pay up out of fear immediately

Out of this world?

There's only so much fun you can have with your feet on the ground. Once adventure tourism has hit the heights and plumbed the depths of our own planet, there may be only one place left to boldly go... **Paul Miles** looks at why we travel, its environmental impact, and where on Earth – or off it – our final destination might be »



My Parents
walked on
THE MOON
and all I
got was this
LOUSY
T-SHIRT!

Imagine. You stand alone on the deck of a riverboat as the Amazon jungle awakes, no other humans in sight. Suddenly, two river dolphins appear. They arch through the sunlight's reflection towards you, then jump and wiggle in the air, showing off pale bellies.

I have a confession to make. I am a travel writer and photographer. Communing with dolphins in the Amazon; spotting polar bears in the Arctic; snorkelling with humpbacks in Tonga; diving in Papua New Guinea; skydiving in New Zealand – these are just some of the experiences I have been privileged to enjoy as 'work'. Nature and adventure tourism are two of the fastest-growing sectors of the worldwide tourism industry. It seems we can't get enough of the wonders of our planet, and if it comes with a burst of adrenaline, even better. We have visited every extremity of Earth, not as pioneering expeditioners, seeking to further world knowledge, but as tourists travelling, comfortably, for our own enjoyment.

Cruise ships with the capacity for 3,000 passengers visit Antarctica. There is bingo on board. An American woman I know, whose hobby is 'collecting countries', 'walked around the world' at the North Pole on her 90th birthday. Afterwards there was tea and cake on the nuclear-powered ice-breaker.

Each year, there are new superlatives: highest, deepest and, despite the recession, 'most expensive'. In October, one company, High & Wild, dropped solo and tandem skydivers into the sky from above Everest: at nearly 9,000m, it was the world's highest commercial skydive. Downwards, you can dive 4,000m below the waves in deep-diving submersibles, with Deep Ocean Expeditions and, upwards, fly to the edge of space in a Russian MiG fighter with Space Adventures. The world's most expensive package holiday is a million-dollar stay at a (publicity-seeking) hotel in Abu Dhabi.

Entering the space race

Now, for those who have 'been there and done that', our final frontier has become another destination. When you have ticked off every continent, or even every country, space beckons. In 2001, American businessman, Dennis Tito, became the first private space adventurer. Since then five others have followed. Now you can go to the moon. US-based Space Adventures offers a lunar expedition for \$100 million (at least) per person. 'Experience the majesty and wonder of earthrise,' and 'explore and experience the far side of the moon,' says the company's website, as if the prospect of a rocket trip around the moon is barely more extraordinary than a sunset cocktail in the Masai Mara. The UK agent for the trip is Bristol-based WildWings, which also specialises in nature tourism. (Fancy your luck spotting the world's rarest sea-bird, the 'almost mythical' magenta petrel? Then book a place on the £3,879, excluding flights, 'Sub-Antarctic Islands of Australia and NZ' tour.) Isn't it incongruous that a nature tourism company sells rocket trips? 'Seeing Earth from space is the ultimate natural



'Now our final frontier has become another destination. When you have ticked off every continent, or even every country, space beckons'

Tourism has already
come to Antarctica –
will adventure
holidays be next?



history experience,' rebuffs the managing director of WildWings, John Brodie-Good. 'Many people argue that it was the first photo of the Earth from space [taken in 1959 by the US satellite Explorer VI] that started the modern environmental movement.'

Britain's own space buccaneer, Sir Richard Branson, promotes space tourism as a means to save the planet. Virgin Galactic plans to start commercial space tourism in 2009. For \$200,000, you will be able to join five other passengers on SpaceShipTwo for a two-hour flight reaching 110km above Earth (space is defined as starting 100km above the surface of our planet.) 'All passengers will be able to leave their seats and float in zero-gravity should they wish, and enjoy a view of space and the Earth stretching for around 1,000 miles in every direction,' says the press factsheet, 'Galactic at a glance'. So far more than 250 people have made reservations, paying deposits totalling in excess of \$35 million. At the press launch, Branson boasted of the 'transforming effect' a space flight will have on 'thousands who'll travel with us': 'Seeing the planet from out there, surrounded by the incredibly thin protective layer of atmosphere, helps one to wake up to the fragility of the small portion of the planet's mass that we inhabit and to the importance of protecting our Earth'. Virgin Galactic has calculated the carbon emissions for a space flight as being 'approximately 60 per cent of a per passenger return commercial London-New York flight'. This equates to 1.5 tonnes of CO₂. Tricorona Climate Partner, a major player in the international carbon market, says Virgin Galactic was 'reluctant' to make data available for it to verify the figures. Managing director Per Egstam says, with some understatement, that 1.5 tonnes 'seems quite low for taking someone into space'. But Branson is adamant: Virgin Galactic will be a force for good for the environment. A reusable spacecraft and unpowered re-entry and landing are two 'environmental credentials' listed. And in September the company announced that the spacecraft would be used to facilitate research into climate change by carrying research instruments for the US government's National Oceanic and Atmospheric Administration.

Voyages of discovery

One of the first space tourists will be scientist Professor James Lovelock, who, in a well-judged PR exercise, has been promised a free trip by Branson. 'It will give me a chance to see the planet from outside. It was that view from space that set me on course to seeing Earth as a quasi-living entity that regulates its composition and climate,' says the scientist who developed the 'Gaia theory'. 'Going into space means a lot to me personally.' But will Lovelock's endorsement of Virgin Galactic persuade others to buy tickets? After all, Lovelock, who estimates that as many as six billion of us will perish because of climate chaos before the century is over, seems to relish controversy. He promotes nuclear power, despite other tried and tested technologies such as solar-thermal. He thinks long-haul flying is essentially bad for the planet, yet considers personal efforts to fly less to be meaningless. 'It's already too late,' he says. Lovelock sees



Above: Tourists in their natural habitat, watched by a cheetah in the Masai Mara park reserve in Kenya
 Pictured: Dive as deep as you like or fly as high, the next goal of tourism will literally be out of this world

‘Safari parks in Africa, coral reefs in the South Pacific, rainforest in South America: many owe their conservation to the tourists paying to visit’

space tourism as a valid scientific experiment that could see relatively low-emitting 'coasting flights' to the other side of the world become a reality. Wouldn't that justify a few space tourism flights? Perhaps, as he says, there is too much 'old-fashioned puritanism' in the green movement? 'All greens do if they become too puritanical is to make themselves exceedingly unpopular, and they won't be listened to on more serious and important things,' he warns. Perhaps part of the meaning of life is a sense of enjoyment and a widening of our horizons. For many of us this means travel and increasingly unusual travel experiences.

This is the view of psychologist and travel specialist Professor Robert Bor of London's Royal Free Hospital. 'Travel gives us a perspective on our place and size in the world, how and where we fit with others,' he says. 'It shines light on our own lives in a way that we do not normally experience when at home. In this sense, travel is psychologically beneficial.' He credits the allure of space tourism to

dissatisfaction with more simple pleasures. 'If we look at modern life, there is a drive constantly to work harder, to excel and be super-successful. "Ordinary" and "comfortable" may be too mundane. The same applies to some holidays. Space tourism is perhaps the ultimate expression of this.'

Will high-spending amateur astronauts come back down to Earth 'transformed', inspired to save our fragile planet? Maybe a CEO will cancel a logging concession. Another will invest millions in carbon capture technology. A celebrity might donate all her wealth to environmental causes. If so, might not the benefits of space tourism outweigh the environmental costs? Or would it be better for the planet if these high-flying space cadets spent their \$200,000 ticket money here on Earth? That can pay for a lot of good works.

There is no doubt that tourism is important to the global economy. The UN World Tourism Organization (UNWTO) reckons that the industry accounts for 5 per cent of the world's economy (and a 'proportionate' 5-7 per cent of global carbon emissions). Even with a world recession, the UNWTO predicts tourism will continue to grow, forecasting 1.1 billion arrivals worldwide by 2010. According to the Pro-Poor Tourism Partnership, funded by the Department for International Development, 'tourism makes significant contributions to national GDP in the majority of countries with the largest numbers, and highest proportions, of poor people. The Gambia, Laos, Tanzania, Papua New Guinea, Zambia and Kenya stand out as being poor countries where tourism is a highly significant economic sector'.

The science of sustainability

Tourism protects conservation areas, safeguards heritage, revives traditions, provides employment and generates foreign exchange. Safari parks in Africa, coral reefs in the South Pacific, rainforest in South America: many owe their conservation to the fact that tourists pay to visit them. As for heritage, culture and employment, in Britain, industrial heritage is being restored thanks to tourism. In Panama, the Embera tribe is reviving traditional dances. In Kenya, a new school is training Masai to become safari guides. Worldwide, \$700 billion is generated in tourism receipts.

Holidays can change tourists for the better, too. People donate money to charity or become active campaigners as a result of firsthand exposure to poverty or environmental issues. Others hope tourism, like an idealistic beauty queen, will bring world peace. The International Institute for Peace Through Tourism aims to 'bridge the north-south divide through sustainable tourism development'.

'Sustainable' or 'responsible' tourism has become a scientific skill. There are postgraduate courses and an International Centre for Responsible Tourism. Mainstream travel companies, such as TUI, now employ sustainability product managers. Tourism is championed as a pathway towards the UN's Millennium Development Goals. In 2008, a set of 'global sustainable tourism criteria' was launched, stipulating, for example, that businesses must 'contribute to the support of biodiversity conservation, including supporting natural protected areas and areas of high



Mount Everest is last year's ultimate travel achievement – next year's hovers tantalisingly close in the night sky



biodiversity value'. In 2009, businesses that meet the criteria will brand themselves with a Sustainable Tourism Stewardship Council logo, just as sustainably caught fish bear the Marine Stewardship Council logo.

All these and many other arguments are held up as justification for government continuing to support and subsidise the expansion of air travel, despite Prime Minister Gordon Brown's pledge to reduce carbon emissions by 80 per cent from 1990 levels by 2050.

Although tourism is undoubtedly more benign than many industries, however, are local benefits worth the impact on the world's climate? Kelly Haynes of Tourism Concern, which describes itself as 'the only organisation in the world challenging international tourism', says: 'it is clear that the economic benefits [of tourism] just aren't getting through to the most vulnerable'. Other NGOs agree. According to the World Development Movement, 98 per cent of the population of the Dominican Republic lives in poverty, despite it being the most popular destination in the Caribbean, itself the most tourism-dependent region in the world. It is well known that as much as 75 per cent of tourism income 'leaks' from host countries back to foreign-owned companies.

After the 2004 tsunami, governments pledged to rebuild the tourism industry of affected coastlines more equitably. Yet Tourism Concern has uncovered evidence that millions of pounds of aid money is being used inappropriately. Fishing communities have lost their homes, while hotels and villas are being built on beaches. The government of Kerala has allocated £12.5 million from the Tsunami Rehabilitation Programme to the state tourism board, Kerala Tourism, and spent it on 'beautification measures to attract tourists' rather than on rehabilitating communities.

If the industry can make such blatant errors with

limitless aid money, what hope is there of it doing things right in the name of profit-making commerce?

Sadly, perhaps tourism is just another industry, its *raison d'être* to make a profit offering an escape from the drudgery of daily life. It sells us 'paradise' – unspoilt beaches, jungles, mountains and happy, smiling natives. Yes, sometimes it is in the industry's interest not only to conserve but also to positively enhance the local environment and community, because, increasingly, that's what we want. There are fine examples of tourist lodges funding the reintroduction of endangered species into restored habitats and the construction of schools and clinics. All too often, though, behind the pristine stage set things turn ugly. Tourism wreaks environmental and social havoc. Even in destinations where ecotourism is championed, damage ensues. A recent study by the University of California and the Wilderness Society showed that coyotes and bobcats were severely disturbed by the presence of ecotourists in their habitat. Elsewhere, in the name of tourism, fragile ecosystems are blatantly destroyed, invasive species deliberately introduced, scarce water supplies diverted to golf courses, beach access for local people curtailed, migrant workers treated as slaves, employees paid less than minimum wages and residents forcibly relocated to make way for tourism development.

It is not too surprising when companies more concerned with luxury than social responsibility make mistakes, but when, for example, Wilderness Safaris, a company with a hitherto good record on social and environmental matters, goes ahead with a safari camp – complete with swimming pool – in Botswana's Central Kalahari Game Reserve, when nearby Basarwa (bushmen) are denied access to water, it seriously challenges the hypothesis that tourism is a force for good. 'The [Botswana] government has the gall to tell the bushmen to make the 400km round-trip to collect water from outside the reserve when tourists will be showering and sipping their drinks nearby,' says Stephen Corry, director of Survival International, which campaigned against the safari camp, due to open in December 2008. 'Many tourists will stay away when they know the background.'

Destination unknown

The international tourism industry is already under severe strain. Recession, peak oil and concerns about climate change all mean fewer airline passengers, a fact that cheers many. (The travel information company OAG reported in October that the world's airlines – those left in business – would offer 451,000 fewer flights and 46.3 million fewer seats in the remaining three months of the year.) The era of mass, cheap travel is heading to the exit. Bad-news stories about environmental or social impacts on top of existing troubles will not be welcomed by a struggling industry.

Perhaps to 'stay away' is the answer? Or at least not promote growth? The New Economics Foundation has shown that, because of high leakage rates, the loss to developing countries from a theoretical halt to aviation growth in the UK would not actually be that great. For the Dominican Republic, for example, it would amount to just 0.48 per cent of expected

'After the 2004 tsunami, £12.5 million was spent on "beautification measures to attract tourism" rather than on rehabilitating communities'

‘Behind the pristine stage set things turn ugly. Tourism wreaks environmental and social havoc, even where ecotourism is championed’

GDP. Alternatively, if the tourism industry is to argue that tourism is a major income earner for poor countries, it needs to reduce leakage rates by, for instance, sourcing more local staff, building materials and produce.

Small island states, many of them tourism destinations, are among the most vulnerable to climate change. ‘If we don’t deal with climate change then ultimately, tourism is dead anyway,’ says Sam Clarke, chairman of the Stop Climate Chaos coalition. There are solutions. ‘We have to hope for more regional tourism rather than just look at long-haul, and we have to price carbon into the economy properly.

‘If we’re talking about equity and justice for the poor of the world it would certainly involve us getting off aeroplanes and thinking of something else, such as increasing the aid budget,’ he says. There are other ways for countries to benefit financially from conserving rainforests, after all. The UN’s Reduced Emissions from Deforestation and Degradation (REDD) scheme is one.

The soaring popularity of ‘voluntourism’ holidays, where paying ‘volunteers’ help scientists monitor the health of rainforests or assist farmers on organic farms is an understandable response. Increasingly people feel they

need to justify their holiday’s environmental cost by giving something back. But isn’t this robbing Peter to pay Paul?

Where do we go from here? Space? The Amazon? Cornwall? Home? Perhaps underlying the whole debate is the biggest question of all: why do we travel? To ‘gain perspective on our place and size in the world,’ as Professor Bor says? Alain de Botton, author of *The Art of Travel*, thinks not. ‘The finest journeys are those that can be taken within our own minds, without leaving the house, indeed without straying far from the bedroom,’ he says. He quotes philosopher Blaise Pascal: ‘All of man’s unhappiness stems from his inability to stay alone in his room’. That was no doubt easier to do with the view of rural 17th-century France from his window, rather than grey, urban, overcrowded 21st-century Britain. But maybe examining the familiar anew broadens our horizons as much as visiting foreign climes. De Botton has led holiday tours of the M1 and Heathrow. It’s not quite the same as a fortnight on a quiet isle, but perhaps, before we plan our visit to outer space – or even the Outer Hebrides – we need to ask if what we’re really seeking is simply our inner selves.

Paul Miles is a freelance writer and photographer



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Here is a selection of some of the current GOLD award winners.



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Fishy Business

ECOLOGIST
FILM UNIT

It is a life of poverty and filth. Standing above the tangle of rusting metal pipes and concrete-rimmed pools that lead into the ocean, Segundo Vorges and Luis Diaz explain how they scratch a living here in Chimbote harbour, Peru. They are part of a twilight community of ‘pipe people’ who survive by reclaiming waste discharged from nearby fishmeal production plants.

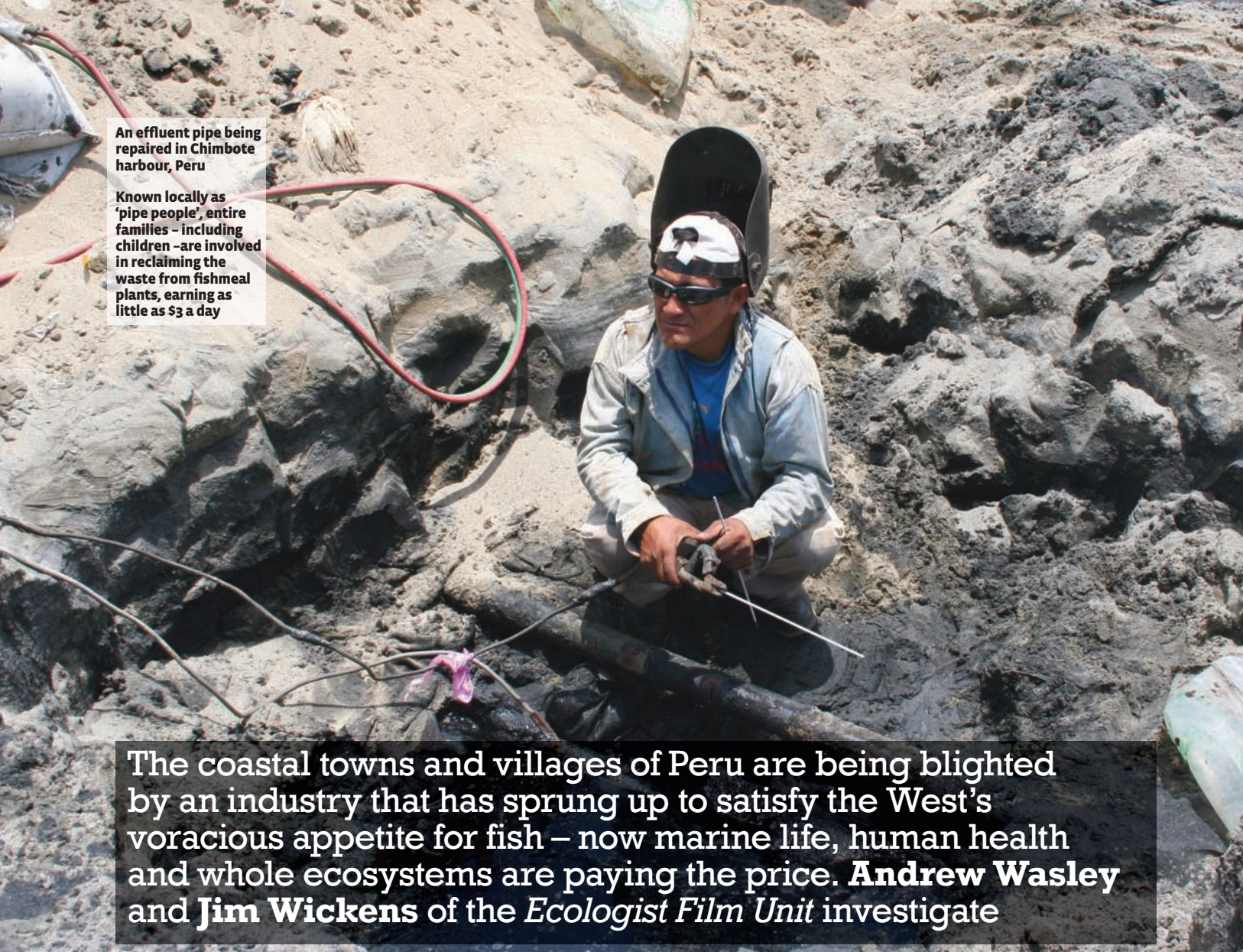
When operational, the pipes carry effluent – an unsavoury mixture of fish bodies, scales and fat – into the pools and the sea. Vorges

and Diaz skim off the useful waste, particularly the fat, before shovelling it into containers. Some is turned into pellets used for cooking and sold at nearby markets. Whole families, including children, are involved in this dirty enterprise, earning \$3 per day.

Despite some nasty-looking substances festering in the pools, the ‘pipe people’ maintain they are unconcerned about potential risks – unlike the environmentalists, who claim such effluent contaminates the sea. ‘Whatever the job is, it’s work,’ says Vorges. ‘We need to bring money to the table.’

This shocking scene is a million miles from the succulent pink salmon fish-steaks on sale across the western world. But the two are inextricably linked: much of the fishmeal and oil produced in Peru from anchovy fish stocks is the principal ingredient of feed used in salmon farming.

Aquaculture has long been targeted by pressure groups concerned at its apparent unsustainability and ecological footprint. Campaigners in Peru and Chile are now claiming that there are serious environmental and social costs, however – including pollution



An effluent pipe being repaired in Chimbote harbour, Peru

Known locally as 'pipe people', entire families – including children – are involved in reclaiming the waste from fishmeal plants, earning as little as \$3 a day

The coastal towns and villages of Peru are being blighted by an industry that has sprung up to satisfy the West's voracious appetite for fish – now marine life, human health and whole ecosystems are paying the price. **Andrew Wasley and Jim Wickens** of the *Ecologist Film Unit* investigate

and health problems, overfishing, and impacts on ecosystems and wildlife – arising from production of fishmeal and fish oil. And the *Ecologist* has learned that at least one major supplier of farmed salmon to UK supermarkets and wholesalers has partnered with a feed company procuring significant volumes of controversial Peruvian fishmeal.

Overfishing and illness

Fishmeal is a protein-rich flour produced by cooking, drying and milling raw fish and trimmings. Fish oil is a byproduct of fishmeal processing. Both are largely derived from oily fish including anchovies, herrings and sardines. High nutritional values – both contain omega-3 fatty acids, beneficial both to humans and animals – has led to massive demand from the aquaculture industry.

Globally, the sector is worth almost \$2.5 billion, with 400 plants producing approximately six million tonnes of fish flour and one million tonnes of fish oil annually. Principal fisheries supplying producers of

meal and oil are situated in European waters and in the Pacific bordering Peru and Chile. Peru is the world's leading exporter, supplying 28 per cent of the UK's fishmeal in 2007.

After processing, meal and oil is usually exported for mixing with binders, such as soya, for output as feed pellets. Salmon are carnivorous and require large amounts of feed: environmentalists estimate 4kg of wild caught fish are required to produce 1kg of farmed fish, fuelling claims that aquaculture is not sustainable.

Peru's Pacific waters contain a vital fishery and one of the world's most biologically productive coastal 'upwelling' ecosystems. Coastal 'upwelling' occurs when deep oceanic currents collide with sharp coastal shelves and force nutrient-rich cool water to the surface. The nutrients support the proliferation of phytoplankton, which in turn provide sustenance for enormous schools of anchovy and other marine animals.

In Chimbote, 40 fishmeal plants process anchovies caught by the city's fishing fleets,

making it one of the world's most important fishmeal hubs – and a flashpoint for associated conflicts.

When we visited one heavily afflicted community – known as April 15th – more than a dozen women and children gathered in the dusty, unpaved street to vent their anger at the fishmeal plants. They claim the plants that loom over their houses are responsible for asthma, bronchial and skin problems, particularly in children.

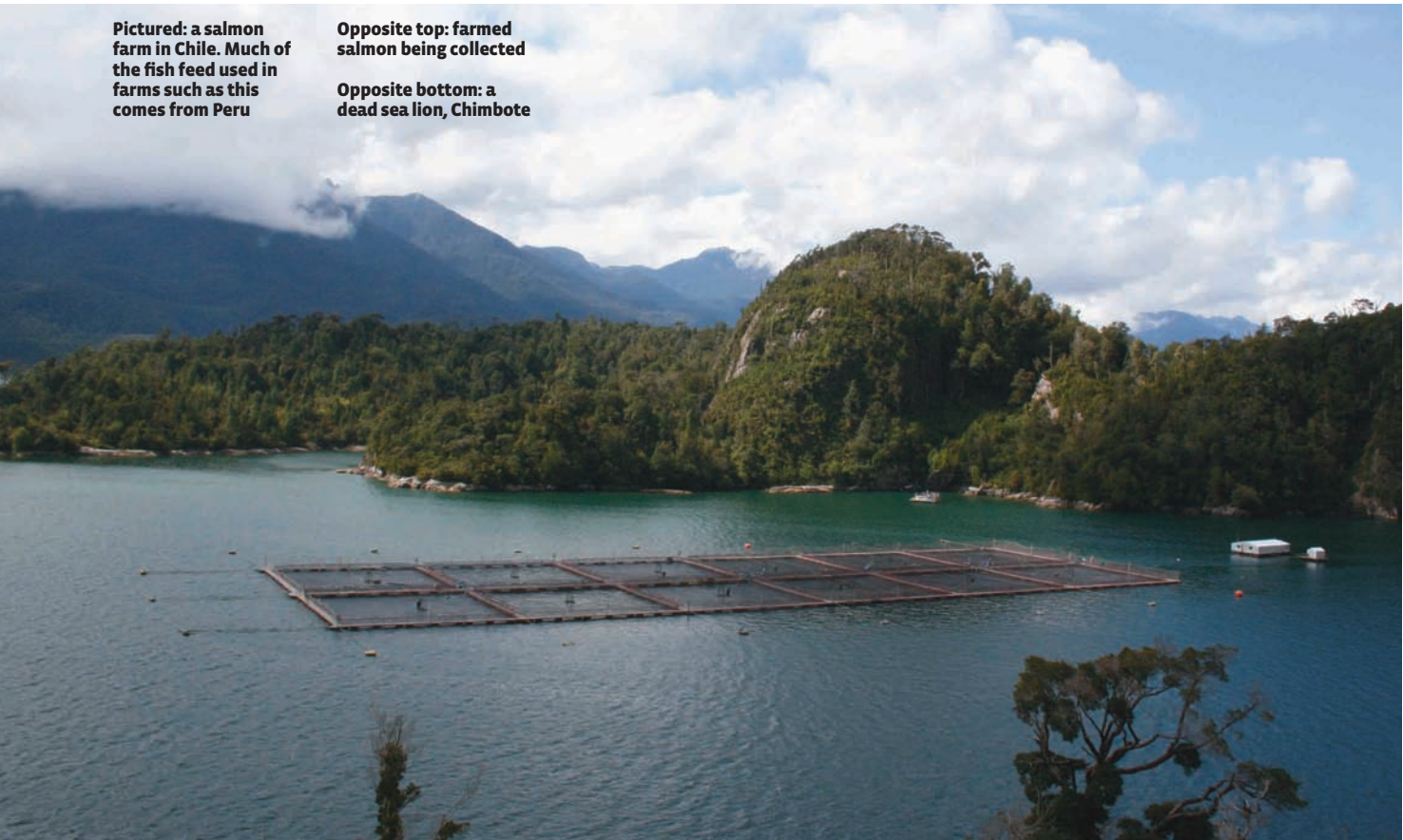
'We know the factories are responsible for these [problems], because when it operates the illnesses gets worse,' says one young woman, holding her young child. 'When the smoke comes it gets so bad we need a mask.' Another says when the plants are operating the pollution is so thick you cannot physically remain on the street.

Footage shot by Chimbote residents, and seen by the *Ecologist*, graphically illustrates typical conditions when fishmeal plants are operational: billowing black smoke drifts through the streets, obscuring vision and

Pictured: a salmon farm in Chile. Much of the fish feed used in farms such as this comes from Peru

Opposite top: farmed salmon being collected

Opposite bottom: a dead sea lion, Chimbote



choking passers-by. It looks like the aftermath of a bomb or a major fire.

Although fishmeal production is now restricted to fixed periods – corresponding with reduced fishing seasons – community members say the industry continues to make their lives a misery. Local people also claim buffer zones designed to separate processing plants from dwellings are being disregarded, and that at least one house is no longer habitable because of the pollution.

‘These people deserve more than to be subjected to this,’ says Maria Elena Foronda Farro of NGO Natura, which is campaigning to resolve the problems associated with fishmeal production. ‘It’s even worse because this fishmeal is being processed for salmon farmed and consumed abroad.’

The activists – and medical professionals – claim they have witnessed first-hand the disturbing pattern of health problems connected to the fishmeal sector.

Dr Ramon de la Cruz, dean of Chimbote’s Colegio Medico del Consejo Regional XIX, told the *Ecologist*: ‘All these respiratory problems are caused by contamination from the fishing industry in Chimbote, which is a very big focal point for contamination’. Although acknowledging that there are other causes of contamination – including the steel industry and cars – he says the fishmeal industry has been particularly to blame.

‘These people deserve more, because this fishmeal is being processed for salmon farmed and consumed abroad’

Cruz states that there is a direct correlation between the onset of fishmeal production and illness in children in Chimbote: ‘As the fishing season increases, the production of fishmeal begins, and this immediately and fundamentally accentuates in the infantile population the occurrences of asthma’.

Pupils at a Chimbote school afflicted by the industry also complain of health problems and environmental damage. ‘It causes fungal growths, breathlessness, we cannot breath,’ says one boy. Another says: ‘As well as make us sick it changes the colour of the ocean. We used to play years back, but now it’s polluted there is nowhere to play’.

During a tour of a row of dilapidated classrooms, teacher Yolanda Lara Cortez claims the industry has proved disruptive and costly. ‘We had to build walls to keep [smoke] out,’ she says. ‘We used to hold classes here, but the smoke, noise and pollution was so bad we can no longer use them.’ Other schools have suffered too, according to Cortez, with as many as 5,000 pupils affected by the pollution.

Down on the shoreline, Romolo Loayza

Aguila, a biologist from the city’s Universidad Nacional del Santa, says that research shows how untreated effluents from fishmeal plants are contributing to serious contamination of the Bay of Ferrol off Chimbote’s coast. He claims the impacts of the waste on the bay’s biodiversity ‘have been dramatic’, as the area was ‘rich in species and also in biomass’.

According to ecological group Mundo Azul, the Bay of Ferrol is among the most polluted marine areas of the country, largely due to contamination by the fishmeal industry. ‘The plants are discharging protein, fat and oil into the bay’s water, as well as contaminated marine water used during the process of pumping the fish from the ship’s hull to the processing plant,’ the group states.

It claims that this, combined with contaminants deposited by air pollution, raw sewage and discharge from the steel industry, has led to the accumulation of a toxic layer – up to a metre thick – of undecomposed, organic material on the sea bed, creating a marine ‘dead zone’.

Dead zones are areas where algae blooms,

and, although they can occur naturally, are often triggered by nutrients from fertiliser run-off, sewage, animal and industrial wastes, and atmospheric deposition from the burning of fossil fuels, removing oxygen from the water. Low levels of oxygen make it difficult for fish and other marine creatures, as well as important habitats such as sea-grass beds, to survive. The UN recently warned that such areas can threaten fish stocks.

Coast to contaminated coast

Other parts of Peru's coastline have also been contaminated by waste from the fishmeal industry – fishermen believe such pollution has led to a reduction in artisanal fish catches, but they also blame the activities of industrial anchovy fleets.

Fishing chiefs and campaigners say the volume of anchovy taken for fishmeal negatively impacts the ocean's wider food chain, and thus the availability of other, previously plentiful species fished for human consumption. They also claim spawning grounds are damaged by industrial fishing.

'Fish is the basic food in Peru, but now there is not enough for local people,' says Manuel Montesa Arroyo, a spokesman for Chimbote's artisanal fishermen. 'We catch less because there are more fleets. There is [now] more deprivation as we catch less.'

Arroyo says that although laws exist to prevent industrial fishing within a five-mile zone of the coast – to protect artisanal food resources – enforcement is weak and breaches frequent. In 2006, local media reportedly filmed as many as 50 industrial vessels fishing just metres off the beach. According to



eyewitnesses, harbour authorities took no action 'because they had no fuel'.

Javier Castro, who represents the industrial fishing industry in Chimbote, admits that the sector was 'anarchic' and that frequent breaches of the law occur, with regular instances of fishing vessels manipulating satellite positioning technology to mask their positions when operating inside exclusion zones or closed seasons.

Campaigners cite official research as evidence of the precarious status of anchovy stocks in the South East Pacific: the UN Food and Agriculture Organization (FAO) is quoted after characterising the Peruvian anchovy fishery as 'fully fished' – meaning it has been exploited to the maximum safe biological limit. And in 2006, the FAO noted two main stocks of anchovy in the South East Pacific are 'fully exploited and overexploited'.

The Peruvian Institute of Fisheries Research – IMARPE – which advises the authorities on

fishing policies and practice, is also cited for reportedly stating that 'anchovy biomass is down, distribution scattered and anomalous distribution of juveniles due to dynamic environmental conditions'.

But the fishmeal industry maintains that anchovy stocks are carefully monitored and industrial fleets controlled through vigorous enforcement. The International Fishmeal and Fish Oil Organisation (IFFO) states that Peruvian anchovy fishing is subjected to 'comprehensive management controls to protect the stock from overfishing'. It says the Peruvian government adopts a 'precautionary approach' to regulating catches, with controls including closed seasons, net-size restrictions, vessel licensing, catch quotas and restricted fishing areas.

The IFFO also points to the satellite tracking system – referred to by fishing chiefs – as further evidence of the framework in place to prevent overfishing, as well as the existence of strict codes of conduct for industrial fishing vessels. IFFO head Jonathan Shepherd says that Peru is an 'excellent example of a country which heeded earlier warnings on overfishing, conducted extensive research and introduced controls and third-party surveillance'.

Feed companies procuring Peruvian fishmeal also claim the country's anchovy stocks are managed sustainably. Skretting – a subsidiary of Nutreco – which in the first half of 2007 saw 47 per cent of its fishmeal globally made from Peruvian anchovy, told the *Ecologist* 'all [our] suppliers of marine products must document that fish used to produce fishmeal and oil have been responsibly sourced, without depleting fish stocks or damaging the wider marine environment'.

Peruvian anchovy was used in almost 50 per cent of the feed Skretting supplied to the UK in 2007, mostly to salmon farms. The company recently signed a contract with Marine Harvest, a major salmon producer, to supply 70 per cent of its feed. Marine Harvest, with farms in Scotland and elsewhere, has supplied salmon to British supermarkets Morrisons and Sainsbury's, and seafood





This Chimbote resident claims her child's health is at risk because of fishmeal processing plants

wholesaler Young's, which has in turn sold salmon to virtually all major UK retailers, including Asda, Tesco and Somerfield.

While there is no suggestion that any of these companies is directly involved in bad practice or wrongdoing, the sourcing of fishmeal from Peru will concern consumers and raise questions over sourcing policies.

Marine Harvest stated: 'The only way we can maximise the value for our shareholders is to ensure that we operate on a sustainable basis. This is why Marine Harvest takes all aspects related to sustainability very seriously... Marine Harvest's feed suppliers have programmes for sustainability including routines related to the purchase of sustainable raw materials.'

Young's says its farmed salmon is a 'sustainable, consistent and high-quality fresh fish raw material', and an alternative to wild caught fish. The company claims the marine ingredients in the feed used by its suppliers are sourced only from 'managed fisheries'.

Maria Farro acknowledges some fishmeal processors are taking steps to reduce the negative impacts of their operations, after Natura established initiatives – involving all stakeholders – to clean up the industry. 'Six or seven are leading the way, implementing



Fishing boats in Pucusana, Peru

Artisanal fishermen claim their catches are down as a result of industrial overfishing



better, less polluting and less wasteful practices,' she says, 'but plenty of others have so far refused to enter into dialogue.'

Ecosystem crash

Natura argues that ultimately, however, fishmeal production primarily to feed salmon and other farm animals can never be truly sustainable, as long as there are 'human mouths to feed' – especially as Peru has experienced problems with malnutrition.

Yards away from Chimbote's bustling port, our investigation discovered another, hidden victim of the fishmeal industry. Lying on the rubbish-strewn beach are the carcasses of six sea lions – a protected species – rotting in the sunshine. The animals are reportedly increasingly being killed by fishermen who see them as competitors for dwindling fish resources.

Seabird colonies too are reported to be under threat because of excessive anchovy fishing to supply the fishmeal industry. Mundo Azul claims that a noticeable reduction in guano – seabird excrement, traditionally harvested for use as a fertiliser – on a series of rocky islands near the coastal town of Pucusana is hard evidence of a significantly reduced population of seabirds, including Guanay cormorants, the Peruvian pelican and the Peruvian booby.

Biologists have recently stated that the number of such birds in the region totals some four million, a massive decrease of a population that once stood at more than 60 million. Although other factors contribute to the problem, biologists have warned that, unless overfishing in the region is curtailed, the 'guano' birds could die off by 2030 as their fish sources dwindle.

The salmon rush

A thousand miles south of Chimbote, the windswept mountains of Patagonia drop steeply into the stormy ocean that surrounds

this region of Chile. This is salmon farming country, and the hub of Chile's multibillion-dollar aquaculture industry, soon to outgrow Norway's as the world's biggest. It is estimated that 40 per cent of all salmon eaten in the USA is produced here, as is much of the frozen salmon supplied to the UK and EU.

Salmon-cage manufacturers, net defouling factories, feed-pipe manufacturers and industrial boat-builders line the highways around the regional capital Puerto Montt. It is an economy underpinned and fuelled by cheap fish feed, and the controversial anchovy fisheries and soya plantations of Latin America that supply it. Multinationals – including Marine Harvest and Skretting – have migrated here to profit from the salmon rush.

The *Ecologist* visited the Mapuche community of Pepiukelen, located in Pargua, just in front of the crossing passage to the island of Chiloé, where many salmon farms are based. Feed companies were quick to buy up strategically valuable land here. For the Pepiukelen, however, the growth of feed production plants in the area has brought only hardship.

'We used to have 30 pigs running free in the forest here, but now the land is so restricted

we can farm only one,' says *lonko* (chief) Manuel Vera Millaquén. 'Today the water in our river is so polluted that the farm animals die, but when we complain to the feed companies, they simply laugh.'

Forced from the land, today only 30 Mapuche remain, and those that do must seek work in the feed plants that have grown on their doorstep, and endure the stench of the fumes from the plants every day. On the seashore, the tribal meeting area stands empty. A traditional place for teaching and ceremony, today it is hemmed in by the barbed wire and brimming towers of the feed plants all around. 'People are losing their traditions. It's like a new kind of slavery,' says Millaquén.

Driving south, snow-clad peaks rising out of the ocean create the image of a wild land that seems – on the surface – virtually untouched by human hand. But every bay is dotted with salmon cages and feed stations and the supply vessels that support them. Vast floating net structures, some stretching as deep as 80m, are interlinked with tangled networks of feed pipes that spew feed pellets into the frothy mass of factory-farmed fish inside each cage.

Under the surface, faeces and feed crumbs create what scientists claim are virtual marine deserts on the sea bed. Commercial divers in Chile told the *Ecologist*, on condition of anonymity, that the corpses of sea lions 'can be found under every farm here', apparently shot for trying to 'steal' the salmon.

Disturbingly, these corpses are joined at times by those of humans. An average of 1.5 divers die every month in Chile carrying out routine work on the salmon farms, according to diving unions. Poorly trained, overworked and underpaid, the salmon farmworker mortality rates in Chile are higher than anywhere else in the world.

For John Volpe, professor of ecology at the University of Victoria, Australia, such examples are by no means isolated. 'Salmon is not cheap,' he says. 'We've created a way for it to be cheap for the consumer by shifting the cost to ecosystems and social communities, who are being degraded in the name of cheap salmon.'

Critics in Chile claim that free trade agreements have created a system whereby producer countries bear the hidden costs of the feed and farming processes used to grow cheap salmon sold in the west. 'The salmon we produce is eaten by the mouths of people in the USA and Europe, but the asshole is here in Latin America,' says Jean Carlos Cardenas of Ecoceanos. 'The true cost of the cheap salmon you eat is being paid with the blood of our people and the health of our oceans.'

Andrew Wasley and Jim Wickens are journalists and producers with investigative agency Ecostorm (www.eco-storm.com)



PHOTOGRAPHY: ANDREW WASLEY

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Should we buy farmed or wild fish? See Dilemma, p64

The First Attempt at 'Bottom Up' Governance is now Law: THE SUSTAINABLE COMMUNITIES ACT

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The Sustainable Communities Act became law in October 2007 with full cross party support. The process in the Act began on Tuesday 14th October 2008 when Hazel Blears invited all principal councils to submit proposals to government for action and assistance in promoting sustainable communities, as defined in the Act.

What's different about this Act? This is not consultation, this is governance by dialogue and reaching agreement. As Hazel Blears said, this Act is about "turning power upside down in this country", and added that it is about "reaching agreement where you say 'I can do this and I can't do that' and then have a dialogue about **the final decision to be taken together.**"

The Act's potential is huge. Communities and councils could use the Act to do things like increase renewable energy, public transport or local food, change the planning rules, change government policy and even force new environmental legislation.

The Sustainable Communities Act became law due to the 5 year campaign run by Local Works, a coalition of over 90 national organisations including the Women's Institute, UNISON, Friends of the Earth, Help the Aged, the Co-operative Group, the National Federation of Sub-Postmasters and the Campaign for Real Ale.

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The Big Dry

As the worst drought in 100 years makes its effects felt in the southern hemisphere, **Dan Box** asks whether the Australian interior is becoming a *terra nullius* – a genuine no-man's-land

The stockmen stalk the cattle-yard through clouds of dust and the slanted rays of winter sun, driving the herd before them. A bull has become separated from the rest and flails desperately against the rusted metal fence. One man, Randall Crozier, has his back turned to the animal, unconcerned.

'Watch your back, mate. Watch your back, mate!' another shouts.

Crozier doesn't turn. He walks on, poker-faced. The bull rears, crashes down into the red dirt and hurtles past, the black steam-engine body brushing his shoulder. Crozier turns and grins. He has gambled, and won.

It is 2pm on a Monday at Anna Creek in South Australia, the world's largest cattle station – at 24,000 square kilometres, it is bigger than Israel. These hungry-looking

cattle are among the very last remaining on the property. Within days they will be sold. Drought, now in its seventh year, has slowly bleached the land, forcing the station to empty itself of cattle in order to save them. The land is dotted with the carcasses of those that didn't make it, whose dried skin holds the shape of full bodies, though the guts and bones have long been hollowed out by dingoes.

The station's human population has also been sent away; soon only Crozier, the station manager, his head stockman and cook will remain amid this vast empty land, waiting for rain. This too is a gamble, but then that is how farmers have always dealt with drought in Australia: in small wagers. Next year it will rain. Only today, more and more, they lose, choosing to fold rather than face another year of bleak blue skies. Of watching fields wither into no-man's-land.

A losing hand?

While the collapse of the country's arterial Murray-Darling river system has drawn most attention, across inland Australia people are being forced into retreat at unprecedented rates. Forces afoot in the bush for decades – mechanisation and the swallowing-up of smaller farms by larger ones – have bred fewer and fewer jobs, and the drought has decimated those that remain. On average, between 2001 and 2006 more than five farming families a day walked away from the land. An as-yet-unpublished study funded by the Australian Research Council describes 'a stagnant or retreating settlement frontier'.

For all its size, Anna Creek is one property within a bigger operation, established in the early 1900s under the rule of Sidney Kidman, the 'Cattle King'. Born into drought in 1857, Kidman ran away from home aged 13 to follow

'On rainfall-deficiency maps, these shifting fortunes look like a spreading virus'

his brothers into cattle droving. He bought land from farmers who had failed, and strung his properties together in what became the largest pastoral empire in modern history. By moving cattle between properties, Kidman believed he would survive any drought. But the six years Crozier has managed the property have coincided neatly with what the Bureau of Meteorology calls the worst dry-run since the 'Federation drought' more than a century ago. That dry run has savaged even Kidman's realm.

Crozier himself is defiant. He is 51 and has been working cattle since he was a ringer in a droving team, aged 13. Strongly built, he has an easy grin and the mottled pink and brown skin of a fair man tanned deeply by a lifetime in the sun. He tours the station on foot and in his Land Cruiser, matching his remaining men to the day's demands.

'It's like playing poker every morning. You get a new hand, you've got a plan in the back of your mind how the day's going to unfold. But there's always a joker in the pack somewhere,' he says.

Place your bets

You would have a hard time getting Crozier to admit the joke is wearing thin. For all its cruelty, drought is part of the natural order here in the driest state in the driest inhabited continent on Earth, and despite his losing streak, he bluntly refuses to accept it won't break soon. Since the last good year of rain, in 2001, the Australian government has flooded \$3.5 billion into rural drought-relief. This financial year the figure leapt by \$760 million, with greater costs foreseen for the future.

Graeme Hugo, a University of Adelaide professor who has studied the drought's effects on inland migration, says its full impact is still unknown.

'You see how tenacious communities are when you see how little these people have earned in the past few years, and yet they are determined to continue,' he says. 'They're betting on their own survival.'

The British settlement of Australia was justified, after the event, by claiming the continent was *terra nullius* – literally, no-man's-land. This Latin phrase was an extension of the Roman principle of *res nullius* to real estate: *res* – objects capable of being owned but that were not yet clearly in somebody's possession – were available to the first taker. A common thread traced through Biblical thought, European philosophy and eventually international law was that land was not possessed until it was farmed. As the Aborigines did not seem to be farmers, they could rightly be ignored.





Convinced they had right on their side, the early Australian settlers stocked their land to European quotas, based on the assumption of seasonal, European, rain. They introduced rabbits, which caused such devastation they were called 'the living drought'. Rivers were diverted to flood imported, water-intensive crops such as rice and cotton. In doing so, the farmers failed to understand the Australian climate, one of wild variability, not regular seasons; of droughts and flooding rains. Their quotas, crops and rabbits ensured that when conditions were right, drought would return – bigger and more destructive than ever. And the right conditions could become routine.

The drought advances

A recent Australian government report on climate change predicts the most severe droughts – one in 20-25 year events – will occur twice as often over the next 30 years. Average temperatures will keep rising. Extreme heatwaves are likely to occur more than 10 times as often, almost every single year.

'While this is a scientific report, parts of these high-level projections read more like a disaster novel,' says the federal agriculture minister Tony Burke. But action, like understanding, has been slow to arrive. 'In terms of government policy, we now know what would happen if we did nothing.'

Today, Anna Creek is one bastion holding out – just – against the drought. Others along the 'wheat-sheep belt', an agricultural frontier running across the south of the continent, are being overwhelmed. The government recently extended drought relief to 32 areas across this region. The drought has retreated in just four areas. On rainfall-deficiency maps, these shifting fortunes look like a virus spreading.

In Adelaide, Dr Peter Hayman tracks them from his office at the South Australian Research and Development Institute (SARDI). Hayman is thin and careful with his words. He has never farmed himself; he studied applied science at university and became fascinated with the rural world modelled on his laptop screen. With government funding he studies the new hand being dealt by climate change, and how farmers can adapt. While others call it gambling, Hayman prefers risk management. After all, you are dealing with people's dreams and ideas. 'You make your own luck,' he says.

To do that, farmers need forecasts of rainfall, temperature and pasture growth. Hayman's Climate Applications Unit provides these, modelling the changing climate based on years of records and the daily experience of farmers themselves. This information forms tributaries running into the more complex data streams of topography, geography and atmospheric projections. The institute synthesises these and assigns predictions to individual bits of land. The result arrives in



Pictured: A young boy in Australia's drought-hit 'Red Centre'

Above: Face-painting is an Aboriginal tradition, but communities are suffering. The springs that sustained older generations of nomads have all dried up

Opposite top: Digging for grubs

Opposite below: Camels, rabbits and foxes have bred into plagues since being introduced to Australia

PHOTOGRAPHY: DAN BOX



The nest of a wedge-tailed eagle. Wildlife in the outback will be less able than humans to adapt to altered weather patterns

Life at the bottom of the dust bowl

■ Triggered by an El Niño weather condition, drought first hit Australia in 2002, appeared to break in 2003, returned in 2006, appeared to break in early 2007, but returned again in August. This year, the country had its driest September since records began, in 1900. Some sources say it is Australia's worst drought for 1,000 years.

■ The IPCC has predicted that Australia faces a future of more frequent and intense bushfires, tropical cyclones and as much as 20 per cent more droughts by 2030. A significant loss of biodiversity is projected to occur by 2020 in some ecologically rich sites, including the Great Barrier Reef and Queensland's tropics. Other sites at risk include the Kakadu wetlands, as well as alpine areas.

■ The Murray Darling basin, which is the size

of France and Spain combined, provides 85 per cent of the water used nationally for irrigation, producing 40 per cent of Australia's fruit, vegetables and grain. Its river system, which crosses much of south-east Australia, is the country's most important river system and is running at around 54 per cent below the previous record minimum.

■ The eastern state of New South Wales is 79 per cent in drought. The southern state of Victoria has declared that 100 per cent of its farmland is suffering drought.

■ Australia is the second-largest wheat, canola and beef exporter in the world, and the largest barley exporter. Drought cut the 2006/07 wheat crop to 9.8 million tonnes from 25 million tonnes the year before.

■ The suicide rate among farmers is twice the national average.

your email inbox. This year the unit has also run 'climate risk-management workshops' for farmers across the state. These teach how to estimate risk and how attitudes to it are formed, as well as recent developments in forecast technology. With this information, farmers can decide what to chance, and where.

Across the hardscrabble farming country of South Australia people know about SARDI for its work on cost/benefit analysis of crops, breeding programmes or genetic markers for production traits in sheep – in effect, all the ways of managing risk. This is something new, something promising that offers probabilities. Hayman has seen a change in attitude.

'People are less and less asking, "What is climate change?" and asking "How can we manage it?"' he says.

Leaving the land

The technology involved, however, defines its own limitations. Email predictions can only be used by those with the inbox to receive them. Risk management data is meaningless if you cannot read; in Australia, those who do not still fall under same blank areas on the rainfall forecast maps. Research on drought's effect on the Aboriginal population across the state's north and over its borders are still in their infancy. On the ground, it is apparent that a tough place is getting worse.

In Wanarn, a dirt-road central desert town of about 100 people, Valerie Foster picks a piece of charcoal from the fire behind her to draw a map on the concrete floor. In quick black strokes she outlines the mission school at which she spent her childhood in the 1950s. There were the cattle pens; there the herds of sheep and goats. The river she used to swim in. All of it now just barren ground.

'There hasn't been enough rain since the mission closed,' she says.

Living nomadically, Aborigines could once adapt to the wild variability of their climate by moving, following the rain. The missionary schools, with their distribution of ration food and, later, welfare payments, slowly encouraged a more settled existence, with the last nine nomads coming in out of the desert at a town just north of Wanarn in 1984.

During her childhood holidays, Foster's family would still collect her from the mission school and walk out through the desert, spending weeks hunting for food and sleeping each night beside a different waterhole. She sketches a journey, lines representing the day's walk between circles where they stopped and drank. Nobody does that any more, she says. They can't: the springs have all dried up.

'I tell my granddaughter how beautiful it was then. Beautiful flowers, Sturt peas. She doesn't believe me,' Foster says. 'No, the days of walking in the desert are over.'

Outside town, the ruined machinery of two

‘Anyone who wasn’t expecting this simply hasn’t been paying attention’

dried-up wells rust under the sun. When these failed, a few years into the current drought, people talked about closing Wanarn down. Eventually another borehole was dug 20km away and water is now piped in.

Hope for the future?

Of more immediate concern is the absence of people themselves. The single shop struggles without dedicated shopkeepers. The high-school teacher – the fifth this year – is leaving after two terms. Almost all the young men and women over school-age, who’ll soon be parents, have followed the bright lights to bigger towns and cities. While they have not directly been driven away by drought, their loss makes it harder for those who remain. The town farm has been abandoned. The bright bougainvillea flowers planted a decade ago, whose petals are used in funeral ceremonies, go unwatered and have begun to die.

Recent government research shows a sudden torrent of people out of what it describes as ‘very remote’ Australia in the

five years before the 2006 census. This area – which blankets most of the country, pulled back only from the line of cities at its edge – has lost one in five of its population in that time.

Without people, the land becomes feral. Camels, rabbits and foxes have bred themselves into plagues. Almost every desert waterhole that has endured the drought has now been poisoned by camel shit. Under international law, any thing that is abandoned – such as shipwrecked property carried up on some distant beach – is once again available for the first taker.

‘This burgeoning environmental hazard to the Australian nation, together with the dynamics of the human evacuation, is now taking on a self-fulfilling dimension in creating a true *terra nullius*,’ says Lieutenant General John Sanderson, a former army chief and state government special advisor on indigenous affairs. ‘Anyone who wasn’t expecting this simply hasn’t been paying attention.’

Only recently has there been a change in sentiment. A new government is in power

and has finally committed Australia to the Kyoto Protocol, years late. Prominent scientists openly describe the country’s red centre as a ‘failed state’, and demand action.

Peter Hayman is at a public meeting in Keith, South Australia. Sixty farmers, collared shirts tucked into belted jeans, are discussing the weather. There is talk of the government’s proposed emissions trading scheme. Inside the raftered town hall, there is an acceptance of change. Even cautious optimism. People are talking about new opportunities. Outside it is raining, which helps.

‘A lot of these people see a reasonable chance that they will survive,’ Hayman says. *You make your own luck.*

Keith, like other rural towns, has begun to see a trickle of people arriving in search of cheaper land. Others are riding the country’s mining boom, buying up long-abandoned farm homes. With every new house raised on empty land, every mortgage agreed on a salary from the mines at Coober Pedy or Roxby Downs, a wager is placed: it won’t happen to me. In Australia, however, you need to accept that the odds are always changing.

Dan Box is a freelance writer who has been living in an Aboriginal community in the Australian central desert

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TAKE ACTION

CAMPAIGNS

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Want to do something to help? Get involved with these campaigns

ONE POTATO, TWO POTATO

Only 18 per cent of potato varieties grown in the UK are currently made available to the public via supermarkets. On National Potato Day (Sunday 25 January), Garden Organic, the UK's leading organic growing charity, will be offering a selection of more than 80 different potato varieties to buy, enjoy and grow for yourself.

The family event takes place at Garden Organic's Ryton premises. To find out more, as well as to access advice on growing your own, visit www.gardenorganic.org.uk

>> No more waste paint

Not sure what to do with paint left over after a DIY blitz? Research conducted by environmental consultancy Resource Futures shows that, in 2007, the UK paint reuse network of 65 Community RePaint projects collected 450,000 litres of paint with a market value of £1.75m, which would otherwise have gone to landfill or other waste treatment. Fifty per cent of it was leftover 'half-tins' donated by the public; the other 50 per cent was end-of-range, discontinued lines or dented tins donated by retailers, manufacturers and decorators. It was used by community groups, charities and those needing to brighten up living and work environments. See www.communityrepaint.org.uk

>> Growing our own

A London-wide project to create new food-growing spaces has been launched. Capital Growth will help to expand existing projects while encouraging new ones on suitable patches of land around London, such as those owned by borough councils, schools, hospitals, housing estates, utilities companies and parks. It also provides financial and practical support to individuals and organisations wanting to grow food for themselves and the local community. See www.capitalgrowth.org

Further afield, celebrity chef Hugh Fearnley-Whittingstall is launching the Landshare campaign, linking UK landowners with would-be local food producers. With long waiting lists for allotments and people increasingly interested in growing their own, the project aims to get people to sign up for news and information on how to start using spare land, ahead of next year's launch. See www.rivercottage.net

CLIMATE MARCH

Don't forget, the Campaign Against Climate Change march takes to the streets of London on 6 December. To join in and for more information, see www.campaigncc.org

>> **Protecting the commons** 400 years ago half of England was common land, now just 3 per cent remains, and much of it is under threat. Owned land over which the public has rights, commons are open to public access, animals have grazing rights there, and they are also habitats for a wide variety of wildlife. The Open Spaces Society has launched a campaign to save the UK's common lands, and has produced a DVD, *Common Vision*, which focuses on lowland commons and why they are important. www.oss.org.uk

>> Sustainable schools

Shawlands Academy school in Glasgow has just been awarded the DCSF Award for Sustainable Schools, and with good reason – it's difficult to think of an environmental initiative the pupils haven't attempted.

They range from the worthy but ordinary – litter-picking and recycling – to the highly ambitious and ingenious: under the guidance of modern languages teacher Basia Gordon, students cut down the invasive population of rhododendron bushes that had swamped the artificial island in nearby Pollok Park. By doing so, they not only created space for native grasses and herons to re-establish themselves, but also built a natural amphitheatre for the performance of an eco-play.

The school recycled more than 885kg of paper and plastic bottles last year, as well as mobile phones and ink cartridges. Unwanted shoes are donated to Africa. An 8ft-tall statue of Medusa in the school foyer, made from recycled material, reminds everyone of the school's ethos.

Pupils have worked with the Countryside Rangers to plant more than 1,000 trees, as well as organising an eco conference in June 2007, an exciting exhibition based on enterprise, citizenship and international education.

The council loans Shawlands a set of hire bikes that pupils can use to get to and from school. The school also runs various international exchanges, which have been the driving force behind the sale of Fairtrade produce at break-times.

Gordon admits that without a passion for environmentalism she might not have had the stamina to pursue the various projects. But the key recipe of her – and Shawlands' – success has been something rather more simple and abundant: 'Sheer bloody-mindedness!' she says.

For more information, visit www.shawlandsacademy.glasgow.sch.uk



« Back2Earth

An initiative of Hackney City Farm, the Back2Earth programme promotes healthy living and a healthy environment within the local community. It offers free courses in sustainable skills to local young people in disadvantaged areas.

Previous projects include a garden outreach scheme that turned unused sites into lush gardens and converted an abandoned carriage into a mini solar- and wind-powered cinema.

The farm also offers a 10-week course, in partnership with the Refugee Council, for the Empowering Asylum Seekers to Integrate programme, which offers asylum seekers the chance to learn useful, practical green skills, while also learning English and making friends.

www.back2earth.org.uk
www.hacknecityfarm.co.uk

» Community Sustainability Trust

An Oxford-based community project that aims to generate 750,000 kilowatt hours (kWh) of renewable energy each year through solar and wind projects. The energy generated would fetch some £100,000 through sales to the grid – money that would pay for energy efficiency improvements projects for local homes and businesses.

One of the Trust's most innovative ideas is to encourage large businesses in the area to lease their roofs to the community for solar energy generation. The power produced would pay the lease and also earn money for the Trust.

The local community centre already has a solar PV (photovoltaic) roof, the primary school is set to follow suit and the Trust hopes that the whole area will reduce its emissions by 90 per cent by 2050.

» Global Generation

Global Generation is a London-based charity working with young people on a series of environmental projects, ranging from local food and healthy eating to installing green roofs and devising carbon reduction plans.

The charity encourages children to lead for themselves in inspiring change in their local communities, while learning skills that will make them sought-after employees. Global Generation's recruits have worked with environmental specialists and businesses to install eco technologies such as water-conservation systems and renewable energy facilities in existing buildings.

After a visit to Global Generation's organic farm, some youngsters have been encouraged to grow food on rooftops and allotments, selling produce to local restaurants.

www.globalgeneration.org.uk

GOING FOR GREEN

These days there's a prize for just about anything, and there are so many awards in the environmental sector alone that even oil companies can end up clutching green accolades. The Big Green Challenge, supported by the National Endowment for Science Technology and the Arts, is different. The competition saw 350 entrants, all of which are tackling climate change through local, community initiatives, whittled down to just 10 finalists. These 10 have a year to demonstrate their effectiveness in the hope of scooping a £1 million prize towards their work. Over these pages, we profile the contenders who offer hope that change can be quick, effective and bottom-up...

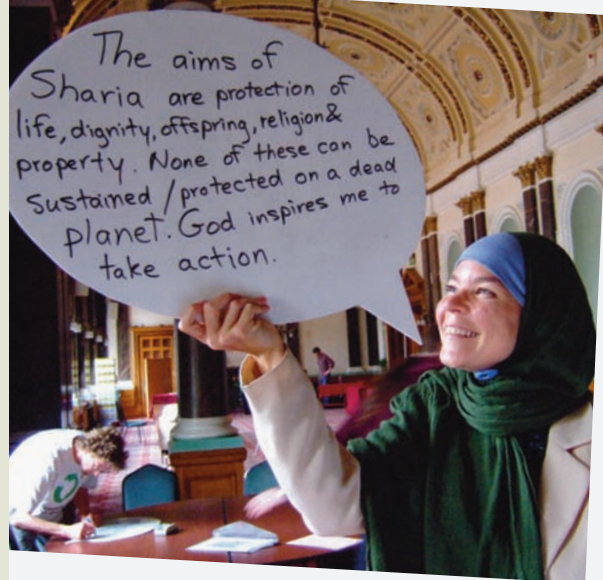
» Faith and Climate Change in Birmingham

This project aims to tackle the complex relationship between the environment and spirituality.

Sprung from the local Friends of the Earth group, the project began as a series of talks exploring the differences and similarities between each faith's interpretation of the world around us.

The group recognised that different religions face different obstacles to curbing their emissions. For instance, the important role of food in Sikh temples means that they may place more focus on how to reduce food waste through composting, while Muslims might try to tackle a mosque's demand for hot water. Most importantly, the work of the group touches people who otherwise may not be familiar with green issues.

www.birminghamfoe.org.uk



The aims of Sharia are protection of life, dignity, offspring, religion & property. None of these can be sustained/protected on a dead planet. God inspires me to take action.



« Isle of Eigg Heritage Trust

In July/August 2008, the *Ecologist* reported on the Isle of Eigg, the revolutionary off-grid eco community on a Scottish island.

The islanders have set up a sustainable firewood company to reduce the demand for coal fires, and founded a solar panel installation company. They are also working on plans for a biofuelled minibus and towards a 50 per cent reduction in individual carbon emissions in the next year, and 71 per cent by 2012. www.isleofeigg.org



« Three Green Valleys, Brecon Beacons

'Breaking our dependence on oil'. No, not a campaign slogan from the US Presidential campaign, but the driving force behind this volunteer group in the Brecon Beacons, determined to tackle the high use of oil-fired central heating in the area.

Three Green Valleys has already begun to restore six small-scale hydroelectric generators in the area, which were allowed to fall into disrepair when coal was cheap and plentiful, and has plans to install as many as 300 more systems over the next 20 years. Some will be privately owned, others by the local community.

Money earned from the projects will be used to fund the restoration of peat bogs, orchard planting and car-sharing schemes, among others.

» The Green School Bus

A hundred and ninety school days times 726 pupils equals... one heck of a lot of school runs, with all their attendant CO₂ emissions.

Unless, that is, you're at St Bede's School in Lancashire, which is planning to introduce a green school bus, run on biofuel, which will have rooftop solar panels to charge students' laptops, mobiles and iPods – an initiative that could apparently shave each pupil's carbon footprint by 8kg a year.

The project will be a partnership between

the various organisations and businesses needed to build the bus – including those that will supply the fuel – and will provide a learning experience for the students as well. The school hopes eventually to hire the bus out to community groups.

www.stbedeslytham.lancs.sch.uk

» Meadows Ozone Community Energy Company

Meadows Ozone is another community-owned energy service company, but one set up specifically to deal with high levels of fuel poverty in the Meadows district of Nottingham.

The company offers interest-free loans so that homeowners can install energy-saving devices. These may be as simple as loft insulation, but can equally mean replacing an old, inefficient fridge with an 'A'-rated model.

As the loans are repayed from the energy savings, the money is recycled to other homeowners. The company is hoping to build a full-scale wind turbine, which will generate £60,000 a year to help tackle fuel poverty.

www.nottenergy.com



» Household Energy Service (HES)

Energy companies just sell you power, right? Not if they're an ESCO – or an Energy Services Company.

The Household Energy Service in Shropshire is just such a one, but with some added extras. It approaches householders to offer a free environmental survey that identifies what measures can be taken to reduce CO₂ emissions. These are then offered at lower cost through approved suppliers with follow-up advice.

Householders are then asked to make a donation to the scheme from the financial savings they make on their energy bills, but the HES also makes money through commission for local businesses and by selling carbon-reduction credits.

www.light-foot.org

» Waste Oil Recycling Project in Prisons (WORPP)

It's easy to learn the wrong things in prison, so a project in West Sussex is trying to teach inmates some sustainable skills to reduce the chance of reoffending after release.

An initiative of the Used Cooking Oil Alliance, each year WORPP takes 40 prisoners nearing the end of their sentences through the process of making biodiesel. With HM Prisons using more cooking oil than any other body except the Ministry of Defence, there's plenty of raw feed-stock to be put to good use.

The end fuel is sold to power prison vehicles, and the profits used to increase and improve training opportunities for offenders.

Research: Marilyn MacDonald and Will Acker. Additional material: Mark Anslow



Local Hero: Karen Lubbock

Karen magazine

It's the polar opposite of the glossy celebrity and lifestyle magazine, celebrating the personal and the everyday. **Laura Sevier** meets the creative force behind *Karen*

Most lifestyle magazines present a glossy, airbrushed, idealised version of life to aspire to. *Karen* magazine does the opposite. In *Karen*, images of food are unstyled (at first, I mistake a close-up of a Ryvita spread with pâté for cat sick), clothes are unfashionable, people are ordinary-looking and their jobs are unglamorous – a butcher, a coalman and a housewife instead of models, actresses and pop stars. There are no must-haves, best buys, it-bags or beauty tips. There aren't even any adverts. It certainly makes for a refreshing alternative.

Don't be fooled by its name, which is a play on other magazines named after women (the

Marie Claires and *Bellas* of the world). Here is a magazine bold enough to celebrate everyday life – the small, the personal, the untrendy – as it is, whether sad, funny, messy or mundane. 'Made out of the ordinary' is its epigraph.

The latest issue, which features a half-eaten bread roll and takeaway coffee on the cover, arrived on my desk a few months ago like a breath of fresh air. A quick flick through revealed a goose-pimpled bum on the beach, a close-up of a greasy fry-up, and thoughts from the local butcher.

It's the one-woman project of Karen Lubbock, who runs the magazine from half a rented 19th-century farmhouse in a Wiltshire village. The content is composed entirely from her everyday experiences – extracts of

conversations ('meet me by the poop heap tomorrow'), photos of neighbours, friends and other people she meets, found ephemera, personal statements and observations.

'I knew it was risky and a bit nuts,' admits Karen, 'but I absolutely believed in the content of work.' We're drinking tea in the cosy farmhouse living room. Although she describes herself as 'pretty ordinary really – I have two cats, I like *Coronation Street*...', I detect a quirky streak. She has a twinkle in her eye, a star tattoo on her wrist and a cracking sense of humour. She fizzes with energy.

Karen first started to put the magazine together in 2003, a time when 'celebrity culture was just about to peak in its saturation of all the mainstream media,' she

Left: Karen Lubbock's magazine presents 'little details of life'

Below: The cover of the latest issue of Karen

Bottom: features include words of wisdom from locals, pictures of coffee cups, fry-ups and meditations on toe trouble

says. 'Which is one of my reasons for making my work – as a kind of antidote to this.' It is also a response to how 'ordinary life' is mediated. 'You know the kind of sensational stories like "Mum killed my boyfriend but we're okay now!'. Everyone knows that's not what life is like.' *Karen*, in contrast presents 'the smaller voices and little details of life'.

An underground hit

Nothing could illustrate this better than when, mid-sentence, Karen pauses and looks distractedly out of the glass door. It appears a man with a cap is wandering around the garden. 'Oh, that's Alan. He's come to check his mole traps. Can I just go and say hello to him?'

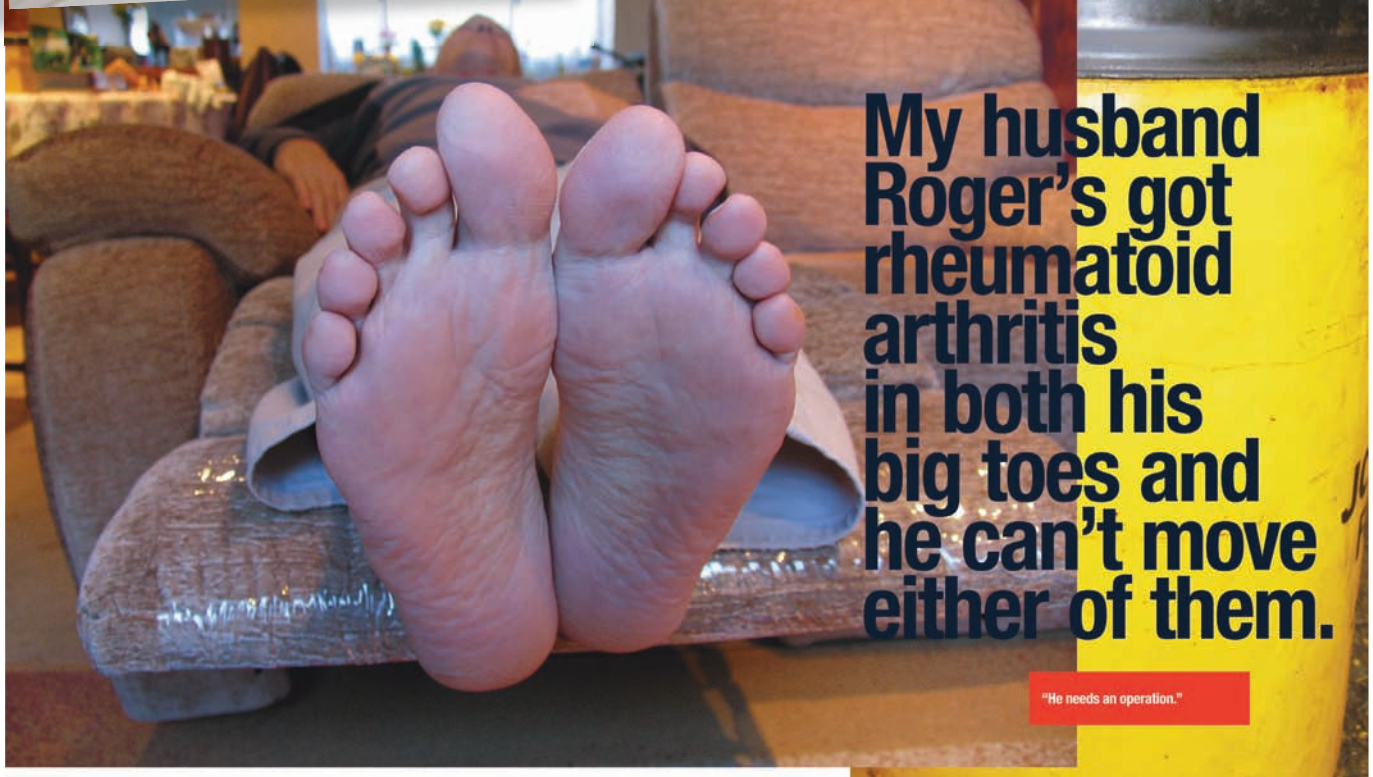
She disappears and I'm left to get a better look at the room. It's pretty rustic. There's an old Rayburn stove, which gives the place a faint smoky wood smell. I notice a coal bucket, a TV and some dried corn cobs hanging from the wall. Outside in the garden I spy overgrown vegetable patches, an apple tree brimming with coxes, and molehills galore.

On Karen's return, the

conversation inevitably turns to moles. 'I wouldn't normally do moletraps – this is the first year I've ever done them, but it looks like we've had an ugly rugby match on the lawn.' Do the traps kill the mole? 'I'll have to ask Alan.' Has Alan, her neighbour from the village, been featured in *Karen*? 'No. But the moles will be in the next issue. I don't know much about catching them but I know a little bit and it's quite interesting.'

For me, this little mole moment sums up what *Karen* is about. Yes, the magazine is cleverly conceptual and critically acclaimed. David Shrigley from *The Observer* newspaper wrote in an article entitled 'The best-kept art secrets in Britain' that '*Karen* succeeds in weaving its humble subject matter into something poetic, profound, absurd and joyful. One issue of this magazine is more interesting than every issue of every other lifestyle magazine in the world put together'. *The Herald Tribune* newspaper called it an 'antidote to a culture of celebrity.' The fact that it's not trying to sell you anything and is a brand-free, corporate-free zone also means it's an antidote to a culture of consumerism. Yes, it's all of these things. But it's mainly about life, as it happens. Moles and all.

Also appearing in the next issue, ('it'll be ready when it's ready') will be a wedding, the cost of hospital parking, vets, online bingo, maybe sheds ('I'd like to work in a shed')....



PHOTOGRAPHY: SARA HAGGERTY

It's an eclectic, humdrum lineup, but I can't help thinking what a little oasis of sanity it represents in a time of global economic doom and gloom. As newspapers run articles on austerity, thrifty living and savvy saving (albeit alongside glossy ads for holidays, cars and mascara), more people are questioning the 'buy, buy, buy' mantra of consumerism and starting to ask 'why?' Does happiness really reside in a new sofa or a pair of peg-leg trousers? Especially considering that UK personal debt stands at a huge £1.44 trillion?

Against this backdrop, Karen's focus on the fabric of everyday life, rather than on the must-have of the month is timely and useful. It keeps things real. Her readers agree. Karen shows me an email from a fashion stylist from Canada: 'Reading it I felt a bit weird... a bit sad, a bit shocked. Maybe because it's so far away from all the fashion magazines I'm used to reading... I think we need magazines like

What women want?

Here's what Dr Anna Gough-Yates, author *Understanding Women's Magazines: Publishing, Markets and Readerships* (£16.99, Routledge) has to say about women's magazines:

'Women's magazines are really about fantasy. They're about fantasy lifestyles, fantasy clothing, fantasy romances. They tend not to focus on the reality of most women's situations.

'Magazines have always been commercial businesses. Most are reliant on advertising as the main funding. There's a lot of hidden placement within a magazine as well as obvious advertising.

'The growing focus on celebrity culture – how they look and how to "get the look" from the high street is another avenue to attract advertisers. It's very difficult for a magazine that does something out of the ordinary to survive.'

yours to "break" a bit that fake feeling that "my life is fashion-glamorous, so trendy and forward thinking". That whatever you do it's not so extraordinary...'

Another reader commented: 'I wish we had a magazine like this in Brazil.' Readers from Canada and Brazil? I'm intrigued. Karen says the readership is not gender-, age-, nationality- or culture-specific. There is something about this little magazine, and its sense of ordinariness, that seems to translate cross-culturally.

An advertising revolution

At £6.50, *Karen* is admittedly a bit pricey, but it's not the kind of magazine you throw away. It is beautifully produced, which makes it more akin to an arty book. As a 'break from fake', a good dose of it could help treat bouts of affluenza (placing high value on money, possessions, appearances and fame when you already have enough income to meet your fundamental psychological needs).

It comes as no surprise to discover that Karen has 'never been in debt'. 'Growing up, the family philosophy was that if you've worked for it and can afford it then you could consider buying it. But still no impulse buying. And then things had to be taken care of because you couldn't go and chuck it out and buy a new one.'

Karen funds the magazine from her own 'little purse,' which is made possible by her day job – running a small graphic design business with her partner. Would she consider advertising in *Karen*? 'That's how magazines keep going. Through advertising and sponsors. I just wanted a space that was a break from it because there's enough of that everywhere.' In the first issue, very quietly, she advertised 'people that I liked'. There were small classifieds in the back for bantam eggs, encyclopaedias and so on.

Will it ever be a mass-market magazine? 'I'm never going to be printing 100,000 copies – I can't afford to do that – but each issue circulation has gone up. The first was a test. I did a vox pop in the local library and in the ICA (Institute of Contemporary Arts) foyer,



Above: Karen Lubbock at home, making notes for the next magazine

Right: getting to the bottom of the everyday

Opposite above: Karen brandishing a root vegetable

Opposite below: choice cuts from the butcher





'All sorts of things happen through the day – what you talk about, who you meet, what you think. I want to embrace that'



and thought, "this could be a goer...!" The second one went further. She'd had some press by then and a distribution company took it. This one, the third, has gone more international. In 2005 it won the Emap Publishing Award for Best Lifestyle Fanzine, with judges declaring it 'an utterly original publication'. *Karen* has also been chosen to represent the UK at the Colophon 2009 in Luxembourg, an international symposium for independent magazines.

Not bad for someone who, aged nine, was told by a teacher at junior school in Grimsby, 'you're not creative – you've got no imagination,' and who never set out to have a career in magazines. She used to live in London's Elephant and Castle. 'In that life I was a social worker – for 13, 14 years.' On moving to Wiltshire she pulled pints in local pubs and picked potatoes on a nearby farm 'for weeks on end.' At this stage she'd never been near a computer. Then her partner, a graphic designer, told her she had 'an eye for colour'. Informal computer lessons ensued and then she decided to train properly. It was during her graphic design degree that she began to make things that featured 'people who were in my life and bits of conversation. The magazine grew out of the work – my passion for it, my intent and my education.

A4 laminated paper with a plastic envelope for people's comments.' At first it was attached to a telegraph post, then Alan made a notice board out of old scraps of wood next to the post office. People did make comments – some wanted to sell something; others were simply: 'Really like this. Good idea.' One lady, Sue, wrote nature notes based on observations made while out walking her dog.

An unusual trait of the magazine is that Karen lets people speak for themselves. 'I don't have to angle it or comment. It just is. I'm a filter for it.' The extracts of conversation mostly have no contextual information. It's just boom! – straight in there. She juxtaposes an image that might be related to the words – or might not. 'Like life. There is no linear process through the day. All sorts of things happen, many of which you can't predict – what you talk about, hear, who you meet, what you think. I want to embrace that.'

The result is that on every page is a surprise. There are little gems in there – the coalman, for instance, says: 'manual workers wear out their bodies, office workers wear out their hearts'. Some words are blown up to headline size – 'My neighbour Ben's got a cold, he's had it all week' – perhaps a cheeky poke at how magazines spin a celebrity doing or saying a pretty ordinary thing into a sensational story. There's a page that states robotically three times 'Go to position 5 please', followed by a blank page, and the small, sad words: 'John died today'. Yes, this is the stuff of life, both the minute

and the monumental, as it is lived. As one reader comments on the website: 'It's about direct language that people really use, not "media speak" aimed to make some big sell.'

Another reader notes *Karen* has been picked up by a US trend website (apparently 'ordinary thinking' will be big in 2009). Ultimately, *Karen* is part of a wider movement. 'There is a slow-moving trend towards personalisation of things in your life, towards the smaller stuff – the fabric of the everyday: people, conversations, relationships,' says Karen. 'We're starting to see more of this in the mainstream press, too.' With the looming threat of recession, the focus is shifting from fantasies towards what is authentic, real and tangible. Simple, ordinary pleasures seem more important. 'I've been saying this since 2003. Now it's becoming "in vogue".'

It is not a vanity project or a whimsy hobby'.

She does other work in the style of *Karen*, too. At a Nottingham cinema she spent a day there talking to people and taking pictures. The resulting show was then projected on to the walls of the cinema café bar.

Local news for local people

Does she read women's magazines? 'I don't buy them but I might have a flick through in the hairdresser's.' This isn't down to 'pious isolation' but more a case that 'there really isn't a magazine for me – and I don't think I'm unusual in that'. She is more inspired by the parish gazette. 'I love it because you get up to date with little bits of news.'

In fact, while studying, she produced a local magazine 'not about the village but for the village', which ran for a year. Every Sunday after two o'clock she walked around the village for an hour or so taking photographs. There was a cow issue – just pictures of cows – and a fields issue. She invited people to contribute or comment. 'It was very low-tech:

For stockists, see www.karenmagazine.com

Laura Sevier is the *Ecologist's* Daily Life Editor

Entering the home of the Toltec master Don Miguel Ruiz and his family is like being wrapped in a huge, cosmic, cashmere blanket. The exuberant shaman-writer and his son, José, to whom he is passing his legacy, greet me at the door of their southern Californian home with warm, genuine hugs.

They know I've come to discuss the meaning of the end of the Mayan calendar in 2012, so they usher me through to their living room and ask if they can film our encounter. Almost before I switch on my tape recorder, Don Miguel begins an eloquent explanation of life on Earth (and elsewhere).

'First, we need to understand that the Earth is a living being. And that life exists on Earth because the sun is sending light to the Earth with all the information on how to create life; the Earth reacts by creating life.

'Life,' he continues, 'existed long before the sun, long before the Earth. It had an origin; it was born, it is growing and in the future it will die. But,' he answers the question on my lips, 'not quite yet.'

As I am writing this, the fourth in the End of the World series, I realise I have not fully explained the Mayan prophecy of 2012 and why it has been creating such a buzz – along with an entire industry of books, weblogs, lecture tours and films.

Many prophecies converge on this time: in the 8,000-year-old Hindu Vedas, we are in a period of time known as Kali Yuga, the age of destruction, and the Hopis are looking forward to the imminent end of the Fourth World – but the Mayans go one better. Their calendar, which begins on 3 August 114 BCE, ends very precisely on 21 December 2012. It's unsettling because the Maya were renowned time-keepers who devised a way to measure the movements of galactic – lunar and solar – cycles.

Perhaps their calendars could be dismissed as the eccentric musings of a primitive society in the grip of some collective numerical mania, were it not for modern scientists who consider the Mayans' to be the most sophisticated method of tracking galactic time before the advent of the 20th century. That, and the fact that the end-date in December 2012 corresponds exactly with the moment when our sun will move into direct alignment with the equator of the Milky Way galaxy – an event that will not happen again for another 26,000 years.

For the Mayans and Toltecs, this quantum

The end of the world is nigh, according to Mayan prophecy, but the wisdom of shaman Don Miguel Ruiz may help us avert disaster, says **Nicola Graydon**

MAYAN GOLD

shift in the cosmic order is creating a new chapter that we can resist – and hasten our own destruction – or we can choose to become part of the transformation.

'All of humanity,' says Don Miguel, 'is just one organ of the Earth. The atmosphere is another organ; so are the forests and the oceans. Each organ creates the equilibrium on Earth that we can call its metabolism. As an organ of the planet Earth, we are part of that metabolism.'

Planet as organism

'One of our functions as an organ of the planet,' Don Miguel continues, 'is to transform energy. We do that through what we call "awareness", which works through the human mind. The human mind is programmed to dream: to perceive, to create a symbology, to create a story – and give a sense to everything that exists. You could say that humanity by itself is that part of the Earth that has the ability to think, to explain. It is like the mind of the Earth – something like that – not exactly, but that is close to the truth.'

It is difficult information to process. I ask, how is it, then, that we are destroying the metabolism of that of which we are a part? Aren't we responsible for destroying the forests and contaminating the oceans? Aren't we on course to destroy life and the planet?

'We are not so powerful that we can destroy the planet,' he chuckles at the absurdity of my illusion of humanity's power, but he agrees that

we are responsible for shifting the equilibrium of the Earth, and that there is a need to take action to correct that.

'For the Toltecs, the current destabilisation of the Earth is simply the consequence of our actions over time, a logical progression of humankind's actions. But it is not irreversible,' he says. 'We have a choice.'

'If we do not find ways to recover the equilibrium of the planet, the Earth is going to do it by itself, and we may not like the results. Millions will die. But if we adjust our behaviour by just a little, we can prevent that.'

According to Don Miguel, we first need to adjust our thinking. Our 'dreaming', he says, has created civilisations, languages and religions, great cities and unbelievable technologies, but currently we are not dreaming the right dream.

In his bestselling book, *The Four Agreements*, Don Miguel details the false programming that most of us live by. He explains that our belief system is based on a series of lies, beginning with our first steps, our first words. According to him, we are all living in a nightmare of 'agreements' that we made a long time ago to fit into our families, our cultures, our race, our religions. Most of these agreements enforce our idea of separation: Us vs Them; our concept that we are separate from each other, from God and, most importantly, from nature and the destiny of the planet. In his book he details how to dismantle our current belief system, agreement by agreement. Then, he says, we can embrace our true birthright.

'The word "Toltec" means "artist of the spirit"', he explains. 'We think of every single human being as an artist, and the supreme art is the expression of the beauty of our spirit. When we think of ourselves as human we think of ourselves as less than perfect, but if we call

'If we do not find ways to recover the equilibrium of the planet, the Earth is going to do it by itself. We may not like the results'

ourselves artists, where is the limitation?

'We are all creators, just like the one who created us. We are messengers – all six billion of us – and for a long time we have been delivering lies, and we are paying the consequences of that, but now we have an opportunity to become messengers of truth.'

The Toltecs, who flowered in pre-Hispanic Mexico, were a society committed to conserving the ancient, esoteric methods their ancestors used to achieve emotional harmony and spiritual wellbeing. For them, humanity is one strand in a vast web that makes up creation. We are just one manifestation of life, and our survival and wellbeing cannot be separated from nature. Indeed, as Don Miguel says, 'Life and nature will continue without us if necessary.'

According to the Toltecs, everything that we are and see around us is made of energy. Toltec practices and rituals are simply a way to stay within the current of that energy. Human beings, they realised, have a tendency to become trapped in their own thoughts, and need techniques to maintain harmony.

The Toltec code of life begins with the notion of impeccability: impeccability of thought, word and action. Impeccable, as Don Miguel explains, comes from the Latin *pecatus*: 'sin'. The 'im' in impeccable means 'without', so impeccable means 'without sin'. For the Toltecs, a sin is anything we do that goes against ourselves.

'Being impeccable,' Don Miguel writes in his book, 'is not going against yourself. When you are impeccable, you take responsibility for your actions, but you do not judge or blame yourself. Sin begins with the

rejection of self. Self-rejection is the biggest sin that you commit. In religious terms, self-rejection is a "mortal sin" that leads to death. Impeccability, on the other hand, leads to life.' Which is why, according to Toltec wisdom, a shift in our perception is vital to our trajectory on Earth.

'The global warming of the planet,' José interjects, 'begins with the global warming of our own minds. We are stuck in negative thinking; in jealousy, gossip, judgement,

competition, fear; in thinking that we are less than we are. You might say that these are little things that have no effect on the planet, but they do. The planet is a mirror for us, reflecting back to us the collective dreaming of humanity. If we change our dream, we can change everything.'

Then, they say, we can become a part of the transformation of the planet.

Don Miguel and his son are descendants of the Eagle Knight lineage of healers and shamans, who passed their knowledge of ancient Toltec wisdom down through the generations. Don Miguel Ruiz was born into a family of healers in 1952 and raised in rural Mexico by a *curandera* (healer) mother and a *nagual* (shaman) grandfather. 'Miracles were part of my daily life,' he recalls. 'For me, they were normal.' However, for a time, he turned his back on his indigenous roots and chose to study medicine and become a surgeon. It took a near-fatal car accident in the early 1970s to persuade him to turn back once more to his family's healing traditions, and to become a shaman.

The end of superstition

Don José calls 2012 the 'end of superstition'. Don Miguel simply says, 'It is just a date on a calendar. We can make it what we want to make it.'

'We can make it into "the end of the world" or we can use it as the start date for becoming everything that we can be. When we can stop believing in lies and live in our own truth.'

Don Miguel is optimistic about our chances. 'We are going in the right direction,' he says. 'Imagine waking up in Europe 800 years ago. At that time we lived 100 per cent in superstition. Today, we live in 80 per cent superstition, but at least we have 20 per cent awareness. We have surged ahead in science and technology and now we have to catch up with ourselves psychologically and spiritually.'

'For a long time, our actions only affected us but now we are endangering other species. It is time for us to take responsibility, but it must be without blame. The people who created the Industrial Revolution were doing it in part to elevate humanity. They did not know then how much it would affect our living systems. But now we know. And our leaders are also seeing what is happening. It is common sense that they will make changes. It is already happening and it will accelerate. Instead of spending billions of dollars on things that are not necessary, we will start to spend it on ways to recover the equilibrium so we can all enjoy life for longer in the way that we know it now, instead of in a state of survival.'

Nicola Graydon is a freelance journalist currently engaged in interviewing the spiritual leaders of several cultures

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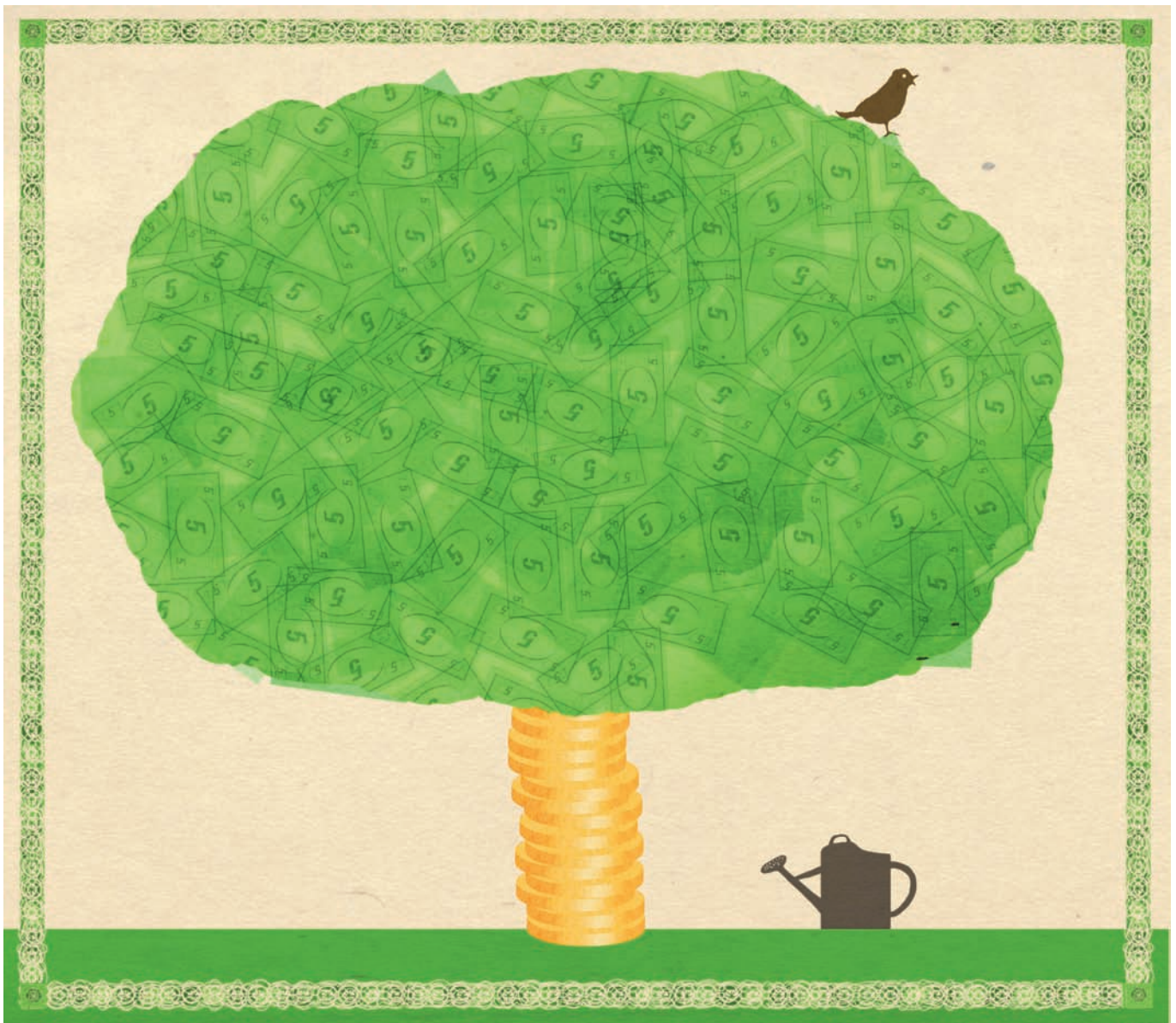


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5 RADICAL THINGS TO DO WITH YOUR MONEY

If you're looking for better things to do with your cash than simply deposit it with unscrupulous high street banks in order to prop up an inequitable – and ailing – financial system, why not consider ploughing your green into green? From socially responsible investment and tree-planting programmes to building up your self-sufficiency skills in preparation for the advent of the post-oil society, there is a wealth of worthy causes out there deserving of your time and money. **Matilda Lee and Laura Sevier** explore a radical response to the credit crunch >>



ILLUSTRATIONS: DAVID HUMPHRIES



1 Support local economies

John Bird, founder of *The Big Issue* magazine, believes that social justice issues can be resolved through the marketplace. The current imbalance in the marketplace stems from chainstore retailers and, in particular, supermarkets beating down communities' best defences: small and independent shops that keep people connected to one another. To redress this imbalance, John and his daughter Diana created the Wedge card in December 2006.

More than just a plastic card, the Wedge card, 'is going to help those shops that make the community tick by encouraging the public to buy in the local marketplace; because it's in the family-owned cafés, butchers and bookshops that people get to know one another, and become part of their community,' John says.

The Wedge card is a loyalty card for local shops, with more than 500 shops across the UK taking part in the scheme. Using a Wedge card gets you discounts and special offers in independent shops, while shopkeepers benefit from increased footfall and the community in general benefits from money being retained locally. To join up, see www.wedgecard.co.uk

The Wedge card is just one example of an initiative aimed at building resilience in local economies. Others include alternative currencies (see box, above) and Community Supported Agriculture (CSA). CSA is a system where communities actively support the farmers growing their food, bringing sustainable food-production back to the heart of communities. Individuals take direct responsibility for how food is produced and how it gets to our tables, while farmers get a guaranteed market for their produce and a fair return. There are approximately 30 operating in the country at present. For more information, see www.cuco.org.uk

2 Bank as if the Earth mattered

What do dirty coal plants, unsustainable logging and the arms trade have in common? They all count on the financial support of leading high-street banks. When deciding on a bank, interest rates are not the only thing to look at, as the impact that banks have on society and the environment through their business-lending is immense. Even if you pay your credit card balance off every month and are not paying interest on a credit card debt, every shop that you use your credit card in has to pay a fee to

the company. This means that credit cards, current and savings accounts, financial investments and even mortgages are all ways that you, as a customer, can make your money work for the causes you believe in.

■ **BANKS** While only the Co-operative and Triodos Banks operate with an ethical mandate, other banks, such as HSBC, have adopted specific environmental and ethical policies. The Ethical Consumer Research Association assesses financial institutions companies by ranking them in three simple categories – good scorers, middling and poor – based on a number of different policies and practices. See www.ethicscore.org

The rise of the Lewes pound

● Described by Rob Hopkins of Transition Towns as 'money that is responsible to the local community', the Lewes pound was created to reduce CO₂ emissions, redirect shopping to local, independent shops and create a sense of pride in the community. There are now some 125 traders signed up to the scheme. Still in the first phase, which lasts until August 2009, the Lewes Pound Group is working with the New Economics Foundation to prepare for a second phase, which will see the introduction of higher-denomination banknotes. www.thelewespond.org

■ **MORTGAGES** The Ecology Building Society, the Co-operative Bank and Norwich and Peterborough Building Society all offer some type of 'green mortgage'. For this and more, see www.ethicalconsumer.org

■ **SOCIALLY RESPONSIBLE INVESTMENT (SRI)** Funds combine financial return with maximising social good and have grown from £1.5bn to £9bn over the past 10 years. Open to judgement on the degrees of their being ethical – many do not disclose which companies they invest in – there are now nearly 100 'green and ethical' retail funds, catering for a wide range of moral stances. A number of these can be wrapped into Individual Savings Accounts (ISAs).

There is also a network of alternative financial institutions that operates alongside conventional banks. These include:

■ **CREDIT UNIONS** Owned and controlled by their members and run for their benefit. Offering a range of services including current accounts, ISAs and Child Trust Funds.

Members of credit unions are connected by some sort of 'common bond'. They are part of a growing movement that allows people to borrow money within a defined community. See www.abcul.coop

■ **COMMUNITY DEVELOPMENT FINANCE INSTITUTIONS (CDFIS)** Independent organisations providing loans and support to individuals and businesses, CDFIs play an especially important role in disadvantaged communities. See www.cdfa.org.uk



3 Plant a tree and improve your health

Trees are the unsung, leafy heroes of our country. Considering all the benefits they bring, it's time we saw them as an investment. As Martin Luther said: 'In the true nature of things, if we rightly consider, every green tree is far more glorious than if it were made of gold and silver'.

In an increasingly toxic world, trees have miraculous powers to clean up after us. Their leaves filter polluted air, absorbing gases such as carbon monoxide; their canopies trap fine sooty particles known as PM10s, which can aggravate respiratory problems, and at street level their cooling and shading reduces the level of the ozone, a smog-forming gas produced when vehicle exhaust fumes are exposed to strong sunlight. Some trees can even clean up contaminated land by absorbing pollutants through a process known as 'phytoextraction'.

Year on year, trees give us fruit and staples, whether apples, pears, timber or horticultural mulch. They also bring us joy. Studies have shown that spending time in green, leafy surroundings can make you a healthier, less stressed person, and can even lengthen your life.

Trees have remarkable 'climate control' capabilities. On hot days, as they lose moisture from their leaves, trees cool the air, and their shelter and shade provides a natural sunscreen. On rainy days they offer flash-flood protection – their leaves and twigs slow down the rate at which rainwater reaches the ground. They absorb carbon dioxide and produce oxygen (a large beech tree can provide enough oxygen for the daily requirements of 10 people), anchor soils and prevent erosion, as well as provide a habitat for millions of species of plants and animals.

Yet according to the Woodland Trust (the UK's leading woodland conservation charity) ancient woodland in Britain is being felled at a rate even faster than the Amazon rainforest. The total area currently under threat is equivalent to the size of the city of Birmingham.

Urban trees are also under threat. In the past five years, London councils alone have chopped down almost 40,000 trees, with replanting programmes either halted or slowed considerably. It's no wonder that the phrase 'chainsaw massacre' has been applied to the process.

Five ways to invest in trees

■ **THE WOODLAND TRUST** protects and manages more than 1,000 woods across the UK. It fights to save ancient woods under threat (visit www.woodwatch.org.uk to find out how to help) and creates new native woodland – it has planted more than eight million trees. Help support the Woodland Trust: become a member or dedicate one, three or 10 trees in the name of a friend or

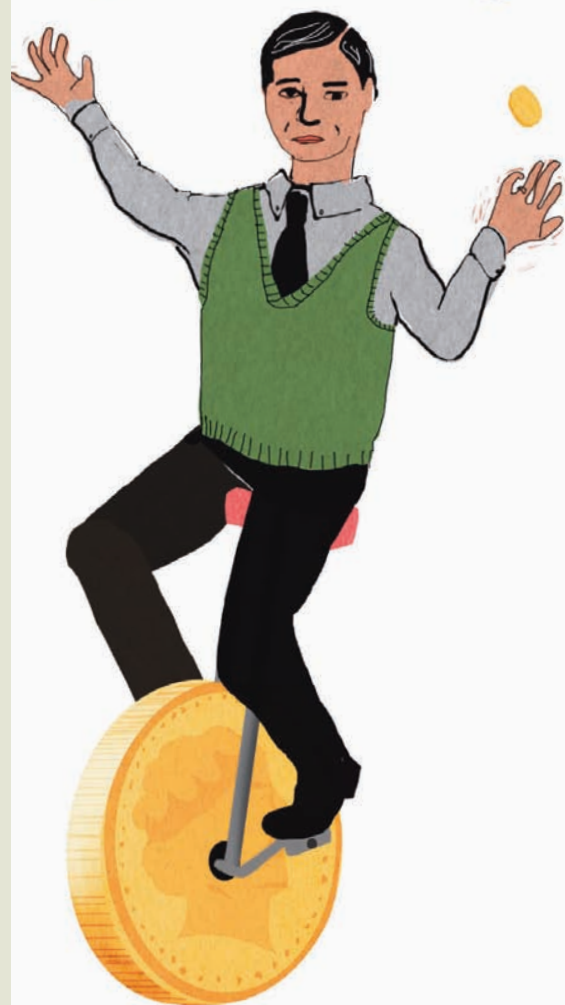
relative. www.woodland-trust.org.uk
 ■ **TREES FOR CITIES** is an independent charity working with local communities on tree-planting and landscaping projects in Brighton, Bristol, Leeds, London, Greater Manchester and Reading. Help it continue to bring much-needed green and natural beauty to cities and towns: become a member, make a donation, dedicate a tree or volunteer. www.treesforcities.org
 ■ **THE NATIONAL TRUST** manages 250,000 hectares of land, including forest, woods, nature reserves, farmland and moorland, as well as 707 miles of coastline in England,

'Ancient woodland in Britain is being felled at a rate even faster than the Amazon rainforest'

Wales and Northern Ireland. Membership gives you access to green spaces and helps fund conservation.

www.nationaltrust.org.uk
 ■ **PLANT A TREE.** Anything you plant could be there for decades or centuries. Native trees or shrubs are the best: they are the backbone of our wildlife's food chain, are adapted to our soils and climate, and have lower maintenance requirements. Make sure you pick a tree that suits the size of your garden. Buy from www.native-tree-shop.com or www.tree2mydoor.com

■ **AND FINALLY...** There are now 220 green or natural burial grounds in the UK. The burial plots can be marked with a chosen tree, plant, shrub or wild flowers, instead of a headstone. The result? A protected green lung for the local area and a sanctuary for wildlife for generations to come. www.naturaldeath.org.uk



4 Invest in skills – yours and others'

Skilled as we may be at filling in forms, finding things on Google and navigating our way through the urban jungle, when it comes to the basics of self-sufficiency (at a household or community level) most of us don't have a clue.

Faced with the converging crises of looming recession, accelerating climate change and peak oil, it's clear that in the future we will need – and value – different skills.

In the words of Rob Hopkins, founder of the Transition Towns movement, we need a 'great reskilling'. 'We no longer have many of the basic skills our grandparents took for granted,' he says. One of the key parts of the transition process, moving an entire community 'from oil dependency to local resilience', is to make training in a range of these skills widely available.

Investing in skills and becoming more self-sufficient can make your money go further. In >>

'A cheaper way to learn new things is to exchange knowledge – I'll teach you mine if you teach me yours'

these thrifty times, however, a cheaper way to learn new things is to share and exchange knowledge, which can be as simple 'I'll teach you mine if you teach me yours'. Once you're skilled, you can swap services with other people, which creates an alternative currency exchange. Local Exchange Trading Schemes, (LETS) are a way to widen the swapping scope and include more people. There are more than 400 LETS in the UK (www.letslinkuk.net), with between 30 and 300 members in each.

Timebanks are another alternative to using money. Members simply exchange their time. The New Economics Foundation (NEF), an independent think-tank, considers timebanking a way to grow the 'core economy' – the abundant wealth of human assets such as experience, knowledge and skill, that are largely 'neglected by the machinery of state and eroded by the market system'. For more information, see www.timebanking.org

How to get skilled

- **FOR ONLINE LISTINGS** of providers of green courses in the UK, visit www.allthingseco.co.uk
- **IF YOU'RE THINKING OF RETRAINING** then *Eco-Centres and Courses* (Green Books, £12.95) by Terena Plowright is the book to find courses on all aspects of sustainable living.
- **THE SOIL ASSOCIATION** runs two-year apprenticeship schemes that provide a broad knowledge of organic agriculture and the food business. For more information, see www.soilassociation.org/apprentice. Also on offer are one day 'masterclasses' on everything from baking bread to hedgelaying.
- **GARDEN ORGANIC** is the UK's leading organic growing charity, and runs courses, talks and workshops. Membership entitles you to discounts, free expert advice, factsheets and its quarterly magazine. See www.gardenorganic.org.uk
- **THE TRANSITION TOWN WEBSITE** explains the theory and practice of transition and has information on training and



resources. Or buy *The Transition Handbook* (Green Books, £12.95) by Rob Hopkins.

See www.transitiontowns.org

■ **THE CENTRE FOR ALTERNATIVE TECHNOLOGY (CAT)** runs courses and produces factsheets and publications on energy, gardening, building and all things sustainable. It also offers a free information service. For more information, see www.cat.org.uk

■ **PERMACULTURE** Join a local group, watch videos, attend a talk, read books and magazines, attend a regional or national convergence. See www.permaculture.org.uk

■ **GOOD BOOKS ON SELF-SUFFICIENCY** include *The New Complete Book of Self-Sufficiency: The Classic Guide for Realists and Dreamers* (Dorling Kindersley, £20) by John Seymour, and *The Self-Sufficient-ish Bible* (Hodder & Stoughton, £30) by Andy and Dave Hamilton. For more information, see www.selfsufficientish.com

Matilda Lee is the *Ecologist's* Consumer Affairs Editor; Laura Sevier is the *Ecologist's* Daily Life Editor

5 Enough is enough

You are not a consumer. It's time to unplug yourself from the world of always wanting more and to rewire yourself as an 'Enoughist'. Ask yourself, 'How much is enough?' and then develop a sense of 'enough.'

'We have created a culture that has one overriding message – we do not have all we need to be satisfied,' writes John Naish, author of *Enough: Breaking Free from the World of More* (Hodder & Stoughton, £16.99). 'The answer, we are told, is to see, be and do even more. Always more. This drive for more is bearing strange fruit, however: instances of stress, depression and burnout are rising rapidly, even though we live among unprecedented abundance. Our planet doesn't look so happy.'

'Enoughism' requires us to defuse the 'status obsession fostered by constant consumption', and to value different emblems of cool, such as time, space and autonomy, rather than trinkets.

Don't buy that thing (until you ask these nine questions)

- Do I really need it (rather than simply want it)?
- Has my desire for this thing been implanted by marketing techniques?
- Do I want it because I want to be fitter, cleverer, more leisured or just cooler? If so, will the consumer item really work that miracle?
- Is there any other way that I could achieve my goal without accruing more stuff?
- How many more hours will I have to work to pay for it? What else could I do with that working time that would bring me more fulfilment than the consumer item?
- Is there anything I already own that I could substitute for it?
- Do I really want to dust, dry-clean, pay to have it serviced or otherwise maintain it?
- If I'm replacing something that I have already got, what's really wrong with the old one?
- If I really do need this thing, is there any way I could obtain it on a free-site, or to borrow it from a friend, neighbour or relative?

Extracted from *Enoughism* by John Naish

ILLUSTRATIONS: DAVID HUMPHRIES

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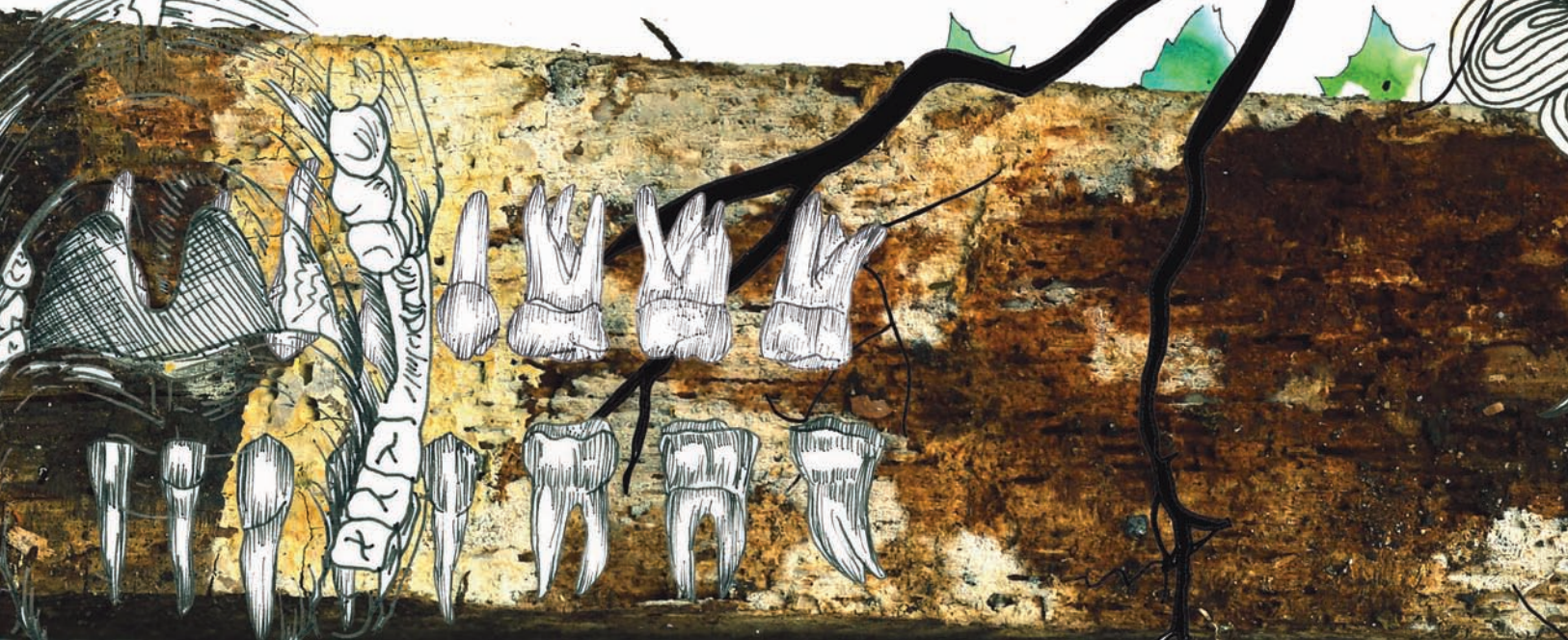
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As a result of market fluctuations, investments and the income from them can fall as well as rise and investors may not get back the amount originally invested.



Expect excellence



Eat the change

It would be true to say that there is no single human activity – other than sex, perhaps – that has such immediate, direct and far-reaching consequences as eating. What we eat, how, where, when and why we eat what we do affects not only us, but also others and the world around us. Indeed, it can do so in incredibly positive ways, but also in ways that are profoundly damaging in their social, cultural and environmental consequences – especially when the specific human or ecological consequences are hidden from view behind the garishly packaged gloss of an increasingly complex globalised and industrialised food system.

Perhaps stepping outside of that system is a non-starter, though – at least for most of us – being not so much an act of rebellion or genuine exploration of alternative possibilities as a mere escapist fantasy, or self-indulgence of no transferable or extrapolatory value. After all, isn't it the case that the success even of just one person stepping outside that system depends to a very large extent on everyone else remaining within it, indeed, upon the very system itself?

Of course, the above considerations have been ones I've been reflecting on while engaged in my own somewhat farcical and abortive attempt at alternative living: a year-long endeavour to sustain mind and body on a diet of 100 per cent wild food. After only 10 days I hurt my back helping a friend move



Community is key when it comes to self-sufficiency, and small steps can lead to great change. Set an example to others and we'll get there together, says Fergus Drennan

house, then struggled on in agony for another eight weeks before postponing the challenge. If nothing else, however, the slow – literally painfully slow – procurement of foraged food does allow time for reflection. The other week I spent three hours on hands and knees harvesting 2kg of plantain seeds, and three whole days bending down to pick up chestnuts, until my hands bled and I couldn't gather any more. Perhaps such acts, and hence the whole project itself, were too extreme ever to succeed.

Nevertheless, as an education and a test of endurance, perseverance, stamina, self-discipline and determination, as well as a valuable creative and organisational challenge, even for a mere nine weeks, it

proved its worth. Ultimately, though, as I knew from the outset, it was the challenge construed as a lone pursuit rather than a community endeavour that was my downfall.

After all, for self-sufficiency to succeed, one has to look beyond the self to the support, co-operation and companionship of others. This is the self transcended and only sufficiently defined and made whole in relation to family, friends, small to large community or even a whole country that may themselves strive collectively for the 'self' that exists in self-sufficient and sustainable ends.

No doubt it is a fact that dire consequences would rapidly ensue if the current world population all turned to foraging. Our collective existence would be in serious jeopardy. Yet, to exist at all, I'm a firm believer that we must earn that right, and that right depends largely upon understanding and respecting nature, learning to work harmoniously with it, rather than in opposition. Understanding only comes with engagement, and foraging is just one of countless ways to do that.

In towns and cities across the world, however, the name of the game appears to be just the opposite – people busily clamouring to escape the dawning reality in an obsessive engagement with distractions: work, drink, drugs, sex, entertainment and shopping. This is why, so often, when walking about in western towns and cities, I'm struck by a bewildering sense of unreality, a nauseous



feeling of vertigo, of literally being pulled along on the crest of a fleeting, yet culturally entrenched, wave. That wave is concisely illustrated in Rob Hopkins's *The Transition Handbook*: a simple graph showing 'The petroleum interval in its historic context' – a transient peak that keeps some of us enthralled and others appalled. No doubt many of us encounter the confounding dissonance of these opposing reactions when, as so often, they are experienced simultaneously. As a psychological state it is hard to endure; spiritually it can be quite debilitating, and in practical terms it can engender the hopeless walk of one step forward, two steps back.

Nevertheless, hope for me comes in recognition of the fact that the world need not be as it is. This reality, in part created by our individual and collective actions

'As Gandhi astutely recognised, we must be the change we want to see in the world'

and reactions could, in corresponding part, be entirely different. If the small actions of many people can indeed produce large-scale change, as Gandhi so astutely recognised, then, as he entreated, we must be the change we want to see in the world. Be the change and eat the change.

Eat the change? Beginning my wild food diet again next year, my aim is to turn away from a focus on myself to complimentary projects that are far more interesting. The Eat The Change project is just one, and is all about encouraging people to source food locally, sustainably, with hope, joy and good humour, as is the community-supported project of my friend, freeeconomist Mark Boyle. Again, inspired by the gentle wisdom of Gandhi, this inspirational project will see

foraging play merely a small part, as Mark seeks to demonstrate the viability of a community-based, non-consumerist existence while living without money for an entire year (from 29 November 2008, buy nothing day).

So... In March I will be beginning my year-long wild food project again; for a number of the reasons cited above but also, and primarily, just for the love of it.

How to make mushroom paper

- 1 Find some birch polypores.
- 2 Enlist the help of some friends to help you get the high-up ones.
- 3 Get enough to experiment with. The contents of a basket will make approximately 15 sheets of paper.
- 4 Remove the dirty bits where the fungi were attached to the tree and chop into small pieces.
- 5 Liquidise with water or natural berry dye to the consistency of thick milk and pour into a tray.
- 6 Using a paper-making mesh and deckle or a fine frying pan cover, scoop up some pulp evenly across the mesh.
- 7 Allow to drip for five minutes.
- 8 Flip mesh over on to a fine cloth. Gently press all over with a sponge to absorb excess water, squeezing out the sponge from time to time.
- 9 Cover with a towel and press firmly down all over.
- 10 Carefully remove the mesh, making sure to hold the cloth down. Allow to dry completely before peeling off the finished paper.
- 11 Now make your ink. Gather some inkcap mushrooms and leave to liquidise on a plate for 3-5 days.
- 12 Strain liquid through a fine cloth and boil to double its concentration.

You are now ready to write and paint on your mushroom paper, using inkcap ink, and feel really quite smug and clever.

In season

Cleavers (leaves and stem)
Chickweed (leaves and stem)
Shepherd's purse (leaves)
Sea beet (leaves and stem)
Sea purslane (leaves)
Wintercress (leaves)
Reedmace (rhizome and young shoots)
Wrack species seaweeds
Sea buckthorn (berries)
Dog rose (hips)
Burdock (roots)
Primrose (roots)
Spear thistle (roots)
Wild garlic (bulbs)

Fungi

Winter chanterelles
(*Cantharellus tubaeformis*)
Field blewits
Velvet shanks
Birch polypore
(for paper-making – see box)

Right: Wild garlic is found in deciduous woodlands and acidic soil

Reading

Fatal Harvest: The Tragedy of Industrial Agriculture
by Andrew Kimbrell

On the web

www.buynothingday.co.uk
www.justforthe love of it.org
www.eatthechange.org

Contact me

For more information or to get in touch, visit www.wildmanwildfood.co.uk

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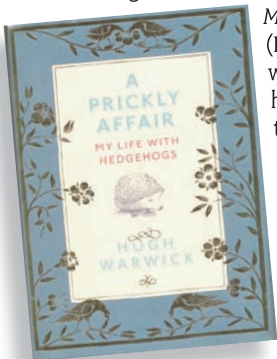


DAILY LIFE

Buy an ethical Christmas tree; celebrate Twelfth Night; spice up festive food; listen to eco rock. By Laura Sevier

DEC/JANUARY

» When the Environment Agency sought a new icon in 2007, it asked people to vote for the species or habitat that most represented their view of the natural world. The hedgehog was the runaway winner, beating out oak trees, bluebell woods, otters and robins, writes Hugh Warwick, author of *A Prickly Affair: My Life with Hedgehogs* (Penguin, £14.99). The worrying thing is that hedgehogs are under threat, with a national decline of 20 per cent between 2001 and 2005. 'If they disappeared from this island, if such an everyday animal could be discarded, what would that mean for us?' Hugh asks.



One of the reasons for the animals' demise is a corresponding loss of field hedges. Hedgehogs spend 60 per cent of their time within 5m of a hedge or woodland edge, and 80 per cent of hedgehog nests are found in hedges.

Gardener's friend

Considered by many to be a gardener's friend, hedgehogs get rid of several of the most horticulturally irritating invertebrates in your flowerbeds or vegetable patch, such as slugs and snails, so it is worth making your garden hedgehog-friendly by... doing less gardening.

Create a hedgehog idyll by keeping a wild patch in your garden with a log-pile and stones. That and a compost heap will provide both food and shelter for hedgehogs.

Spotlight on Hedgehogs



3 THINGS TO DO...

Volunteer

Volunteering is a chance to learn new skills, meet new people, have fun and contribute to a cause. Don't know where to start? Go to www.do-it.org.uk and search by interest and postcode more than 1m UK opportunities.

Reduce

Cut down on household waste. See page 62 for tips on reducing your festive refuse footprint.

Save money

Beat the credit crunch this Christmas by signing up to Christian Aid's daily advert email. From 1 December to Christmas Eve you'll receive handy hints on how to save cash, cut carbon emissions and have some Yuletide fun. www.christianaid.org.uk/advert

21 Dec
WINTER SOLSTICE
The shortest day and longest night of the year



13-14 Dec Eco Design Fair

Products on sale range widely; from recycled fabric Christmas stockings to jewellery, books and edible shoe polish. The Eco Design Fair offers a unique chance to meet designer-makers and chat about their challenges and criteria. There are prices to suit every pocket and organic mulled wine and mince pies to tuck into by the Duke of Cambridge Organic pub.

The Boiler House, The Old Truman Brewery, 152 Brick Lane, London E1. Entry: £2, conc: £1. www.ecodesignfair.co.uk



this month

By Laura Sevier

3 Dec One Planet One Day

How can One Planet Living principles be put into practice? Find out at this one-day 'convergence' event in central London hosted by sustainability experts BioRegional. The focus will be on international cutting-edge projects that apply the 10 principles of One Planet Living; the aim is to provide opportunities 'to create solutions and learn together.' Speakers include design guru Kevin McCloud and RIBA president Sunand Prasad. www.oneplanetoneday.co.uk

* PICK OF THE MONTH

THTC HEMP TRACKSUIT

An eco-outfit that will see you through the winter, whether vegging out on the sofa after too much merrymaking or attempting to lose some seasonal flab with a jog round the park - and being 'urban eco wear' by design it even looks cool enough to wear on the street. Made by our favourite hemp clothing company, THTC, the tracksuits come in his and hers styles in a range of colours, and are made from 55 per cent hemp and 45 per cent organic cotton. THTC's range of sporty gear includes t-shirts, polo shirts and sweatbands. THTC is offering 25 per cent off any order until 5 January.

➤ Go to www.thtc.co.uk, choose your order and type 'Ecologist' into the voucher box, then press 'redeem'.





SPICE UP YOUR FOOD

ADD A SEASONAL, SPICY EDGE TO YOUR VEGETABLES, SOUPS OR STEWS

CLOVES Best bought whole. Stud the cloves into onions to add to stock or soup, or use them to enhance the flavour of meat.

NUTMEG Grate it into vegetables such as cabbage, spinach or broccoli. It combines well with cheese, egg and chicken dishes.

CINNAMON Commonly used in cakes and biscuits, fruit desserts and to flavour cream and syrup, cinnamon is great for tagines and curries.

Try these... Steenbergs Organic's mini-box of eight Fairtrade spices (left) is widely available in Oxfam stores for Christmas 2008 www.steenbergs.co.uk

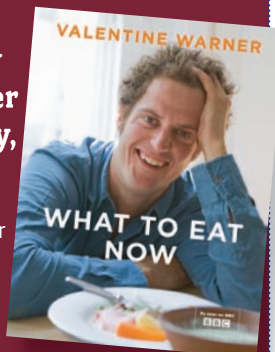


New release

What to Eat Now Valentine Warner (Mitchell Beazley, £20)

Recipes for more than 100 autumn and winter dishes from the latest TV chef on the block, who is genuinely passionate about

British, seasonal produce. The BBC2 series *What to Eat Now* showed Warner sourcing, picking, shooting and stewing all things local. His cookbook includes basics like 'red cabbage done properly,' classics such as borscht, and fresh ideas – warm autumn salad of wood pigeon, roast chicory and pickled walnuts.



Vegetables

- Beetroot
- Broccoli (purple sprouting)
- Brussels sprouts
- Cabbage
- Cardoon
- Carrot
- Cauliflower
- Celeriac
- Celery
- Chard
- Endive
- Garlic
- Jerusalem artichoke
- Kale
- Kohlrabi
- Lamb's lettuce
- Leek
- Onion
- Parsnip
- Potato
- Pumpkin
- Rocket
- Shallot
- Spinach
- Squash
- Swede
- Turnip
- Watercress



Top: Young chard is great in salads; stew or sautéed older chard

Above: Quince is ideal for making jams, jellies or quince pudding

Fruit and nuts

- Apple
- Chestnut
- Pear
- Quince
- Rhubarb



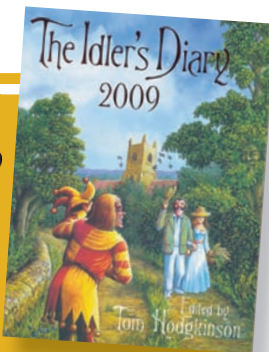
A tree is for life, not just for Christmas

If you live in or near London, buy your tree from the Christmas Forest, an independent 'treetailer' that sells trees at seven sites around the city (see www.christmasforest.co.uk). Trees are sustainably sourced – every tree cut is replaced by a new one, mostly in the UK to minimise tree-miles. Even better, for every tree you buy, another will be planted in Burkina Faso (the world's third-poorest country) through the charity Tree Aid. A tree could mean housing, food, fuel, medicine and money by selling the things growing on it for a family in Africa. Last year the Christmas Forest were able to give over £9500 to Tree Aid. The aim is to better that this year.

New release

The Idler's Diary 2009 (Cassell, £9.99)

With recipes, drawings, arcana, poems and other pearls of wisdom, *The Idler's Diary 2009* is designed to fill your year with pleasure, merriment and reflection. It's edited by the man behind *The Idler* himself (and the *Ecologist's* 'How to Be Free' columnist), Tom Hodgkinson. To order, see www.idler.co.uk



24-25 Jan **Birdspot**

2009 marks the 30th anniversary of the RSPB Big Garden Birdwatch. To take part, all you need to do is watch your garden or local park on either Saturday 24 or Sunday 25 January 2009. Simply spend an hour counting the birds, recording the highest number of each species seen in your garden (not flying over) at any one time. Find out more at www.rspb.org.uk/birdwatch

3 OF THE BEST... EVERGREEN HERBS

These can last the winter outside, are easy to grow in pots throughout the year and are useful in the kitchen:

ROSEMARY Add sprigs to soups and casseroles or sprinkle over roasting potatoes or meat.

SAGE A delicious addition to stuffing and nut roasts, as well as salads. Sage tea can be used to remedy sore throats – gargle with a warm infusion of a few chopped sage leaves.

PARSLEY A great favourite for salads and soups, as well as sauces.

Top growing gift

Rocket Gardens, based in Cornwall, grows and supplies seasonal instant organic vegetable and herb gardens. Its gift vouchers make great presents. www.rocketgardens.co.uk



this



4 Jan Twelfth Night Celebrations

A Holly Man, (the winter guise of the Green Man) from pagan myth and folklore, decked in evergreen foliage, appears from the river Thames before 'wassailing' the river and the revellers on Bankside... It can only be the annual Bankside Twelfth Night celebrations. A raucous celebration of the New Year that mixes ancient seasonal customs with contemporary festivity, seasonal plays are performed outside the Globe theatre, followed by a procession

through the streets to Borough Market for mulled ale, fine food, storytelling and dancing. It is free, accessible to all, and takes place whatever the weather.
New Globe Walk, Bankside, Southwark, London SE1
www.thelionspart.co.uk

► For more information on seasonal festivities and customs around the UK, see www.english-in-particular.info



17 Jan Go wassailing

Wassailing usually takes place on 17 January – Old Twelfth Night. It is an ancient custom in cider-making districts to encourage the apple trees to fruit well the following season (*wassail* comes from the Anglo-Saxon *wes hal*, meaning 'to be whole, 'in good health'). The best or oldest apple tree is chosen and is toasted and splashed with cider, songs and a good rapping (to drive away evil spirits). Wassailing still takes place across the country – find out where at www.english-in-particular.info

month

New release

Rhwng y Llygru a'r Glasu (Between the Ages of Pollution and Ideology)

Gai Toms
(www.sbensh.com, £11.99)

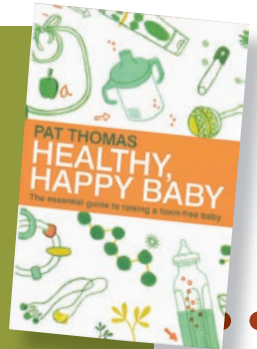
'It's not me who's going to save the world, it's up to all of us,' sings Gai Toms – through half a salvaged canoe. The Welsh singer's new eco album is all about spreading the word on the environment in the greenest way possible. He does it using a drum kit made of plastic and scrap metal, local North Wales musicians (to keep travel to a minimum), recycled CD packaging and intelligent lyrics with a green bent. The 13 songs on *Rhwng y Llygru a'r Glasu* are heartfelt and powerful, and Toms could choose no more fittingly ironic a medium for pleading, cajoling and shaming us into cleaning up our act than dirty rock'n'roll. Da iawn wir. *Eifion Rees*



New release

Healthy, Happy Baby Pat Thomas (Rodale, £7.99)

We may live in an increasingly chemical world, but it is still possible to raise a toxin-free baby. The new book from *Ecologist* Editor Pat Thomas is an 'all you need to know guide' packed with practical, easy suggestions, tips and advice for parents. There's also a section on how expectant mothers can reduce their exposure to chemicals.



24-25 Jan Green Festival on Climate Change



A two-day 'festival of debate' organised by Intelligence Squared ('the London forum for live debate'), its aim is to raise public awareness of the scientific, economic, regulatory and social dimensions of climate change. Bringing together the brightest thinkers on the subject, speakers will include Vandana Shiva (in principle), Tony Juniper and Jeremy Leggett. The festival's four debates will include one led by secondary school children.
The Royal Geographical Society, London SW7
For ticket information, see www.iq2greenfestival.com

New Internationalist www.newint.org/subscriptions



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Carol Bamford

Founder, Daylesford Organics & Bamford Clothing

What inspired you to set up Daylesford Organic?

At an agricultural show more than 20 years ago, I went into the organic farmers' tent: it was exactly what I had been thinking and feeling about the need to grow crops naturally, without depleting the earth – and feed my children better in the process. From that moment we started painstakingly to turn over our estates to organic, traditional and sustainable farming.

What is your favourite Daylesford Organic product?

Gloucester cattle are an immensely rare heritage breed – until recently they were threatened with extinction – but we have managed, with loving care, to assemble a herd, and this year we produced organic Single Gloucester cheese, which has its own definition – an *appellation d'origine contrôlée* – and is made from the milk of Gloucester cows, in Gloucestershire. We have brought back a little bit of native tradition, just as it was about to flicker out and die. When you taste our Single Gloucester, you're in touch with the produce of an animal perfectly suited to its native surroundings. There's a sense of harmony and completeness about it.

What are the biggest challenges of producing an ethical fashion label?

We strive constantly to improve the footprint of our business, and it can take a long time to produce something as pure as the motivation behind it. For example, we have used khadi cotton from India, a beautiful, spiritual textile, innocent of all the chemicals that harm both the environment and those who work it. Setting up a chain of production, which includes sponsoring training programmes and setting up schools out there, is a long business. It requires dedication.

What advice or words of wisdom would you give someone just starting an 'ethical' business?

Don't give up. There are plenty of people prepared to sneer at the small size of the contribution you might be able to make.



Believe that you, as part of a whole movement, can make a real difference.

Can you describe a typical work day?

What is typical about my work day is that wherever I am, I start with yoga and meditation, but from there onwards it's crazy in its variety. I might be at the farm shop in Gloucestershire, checking that we are telling our story properly to visitors; on the farm, looking at the progress of our turkeys as they race around and enjoy their freedom before it's Christmas; or in Milan, introducing a new season's collection for Bamford – I'm very 'hands-on'.

What's your favourite meal?

When we are on holiday as a family, we stick to very simple things – Slow Food, like a beautiful boiled dinner, with tender meat melting off the bone. Simple, delicious things that the children have grown up with, and request as a special treat for birthdays.

What is the greatest compliment you've ever received?

Lord Rothschild, who is doing such marvellous things for the National Trust, once reportedly said that I had brought 'goodness and gaiety back to the countryside'. That made me blush with pleasure.

If your house were on fire, what one thing would you save?

Several years ago, I rescued a small dog from the back streets of Naples; he needed to be fed by hand and nursed through the night

as he struggled for life. His name is Bellini and he is a wonderful character – he has travelled all over the world with me, and sired a generation of plucky little dogs. He has won hearts everywhere – and he is the most devoted of companions.

How do you define success?

I would define success as achieving a balance in life. It's the one key element in happiness.

Which living person do you most admire and why?

The environmental campaigner, author and physicist Vandana Shiva is a fountain of wisdom and inspiration. I cannot conceive of an area – be it agriculture, biodiversity, bioethics, the position of women in the developing world – in which she has not been a pure force for good.

In a nutshell, what is your life philosophy?

Do unto others... and do unto the planet as you would have the planet do unto you. If we can hold on to the notion of our co-dependence on the Earth, then we shall be all right.

What is the best advice you've ever been given?

Be grateful for each day... and make sure you get enough sleep!

www.daylesfordorganic.com
www.bamford.co.uk



How to...
recycle
seasonal
waste



From unwanted gifts to wrapping paper, how much rubbish will you produce this Christmas? Tracey Smith offers suggestions for minimising your festive footprint

Ah, 'tis the season for peace and goodwill to all men – and backaches for all bin men. The Christmas crud will soon be upon us, and there will be more packaging, paper and crunchy plastic in our homes than our heads can cope with and our rubbish collectors know what to do with.

I'm not doing a 'Bah, humbug' here – on the contrary: I'm a trashy realist, and an optimist at that – I'm here to help you cut it right back.

Remember, one man's icky gift is another man's treasure, and savvy shoppers can simply rewrap unwanted presents and give them to someone else. If you can't find anyone to offload them onto, be gracious: post the items on Freecycle and do somebody a good turn.

You'll find plenty of unopened bargains and untarnished hardback books at your local high-street charity shops. Pick an outlet with a cause close to your heart and do everyone a favour.

Virtually lovely gifts

If you really want to be clean of the wrapped present scene, make your intentions known to your friends and family. Tell them you'd rather have something like this instead:

- A digital subscription for a great magazine (that's how I get my *Ecologist* delivered!). It's often cheaper than the paper version, you have a fantastic search facility at your fingertips and you're not cluttering up the recipient's house either – a win, win, win situation.

- How about a 'green experience break', many of which are featured in the *Lonely Planet Code Green: Experiences of a Lifetime* book, or see 'Green Places' on the Alastair Sawday's website for more ideas (www.sawdays.co.uk).

- If you're looking for something on a lower budget, book a rural craft course such as those offered at the Magdalen Project in Somerset. There's bread, sausage and cheese-making, even green woodworking, and its straw-bale building course might set your recipient up to do their own eco-build. See www.themagdalenproject.org.uk

- Or how about a nice slice of rainforest? Not literally, you understand. The lovely Ru Hartwell at Treeflights will plant you a beautiful gift that will outlive you and your recipient. See www.treeflights.co.uk

If you simply cannot avoid going to a big store to buy your presents, then consider

unwrapping your purchases at the point of sale. You are not legally obliged to take any packaging home and can leave erroneous plastic, polystyrene, cellophane and cardboard for the retailer to responsibly dispose of. Leave the problem of packaging at their doorstep and don't take it all home. The landfill tax and other impositions might eventually make them rethink what they stock on their shelves.

Paper malarkey

As the recession deepens, rubbish becomes a resource. From this year, collect all the posh ribbons, bows and the really nice wrapping paper you receive with your presents, and stick it in a box to reuse next year. Dig out last year's wrapping paper and cards and be sure to use them all up before you buy any more.

In Britain, we spend more money per head on greeting cards than anywhere else in the world – around £1.3 billion a year, according to Mintel. It's the most successful greetings card industry in the world, and in 2006, 800 publishers knocked out more than 2.87 billion of them. Keynote's market report claims we send an average of 55 per person per year.

Have your very own Blue Peter moment and make your own. Kids are not a prerequisite (though they can be very creative and might help you unlock your unhoneved skills), but once you get going there will be no stopping you. Buy a pack of pre-creased plain cards from a local craft shop and get a little rubber stamp with something funky on it (I use a fat chick – don't ask) and press it on to the back of your

designs to give them a personalised touch. Here are a few suggestions of things you could liberate from your bin in order to decorate cards and tags:

- Pictures from magazines or catalogues
- Tissue paper
- Buttons and toggles
- Sweet wrappers
- Beads from broken necklaces and bracelets.
- Interesting bits of paper and scraps of wool, embroidery thread and material.

Take Mary Poppins's advice and use some 'brown paper packaging tied up with string' to wrap it all up. It's dead cheap and you can buy great rolls of the stuff. Add a matching design from your card to make it look swish.

Food for thought

And finally, don't be a martyr providing all the munchies this year. If you're having a bit of a do, make it a sustainable event. Ask your guests to bring along a contribution to the table that they have grown or sourced locally from a thoughtful producer, and if they feel so inclined, why not let them cook it too!

Get everyone involved in the preparation and celebration of the food. Make the kitchen the party central. Jamie Oliver has hit it right on the head with his 'Pass it on' campaign – have your guests swap their cooking tips and techniques with a glass of wine in hand and Wizzard playing in the background.

And if you do find yourself at the deli counter buying up every nibble known to man, go armed with your own set of sealable containers to put the food in and say 'no' to unnecessary plastic pots. They might be taken aback, but they shouldn't refuse you. If they do, change your shop.

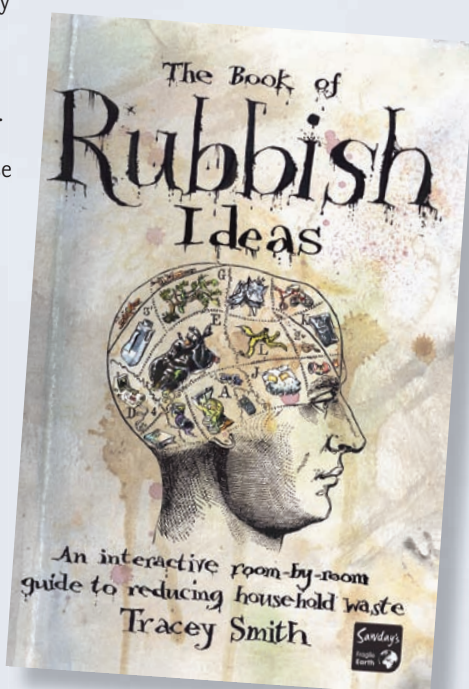
Wrapping up

Christmas is a wonderful time, but the whole commercial element does get a bit much, particularly when the retailers start hanging out the tinsel in mid-October.

What chance does a reforming consumer stand against that kind of onslaught?

There's only one way and that's head-on – with a positive attitude and with any luck, your new and improved approach to reducing your rubbish will last a lot longer than your New Year's resolutions.

For more ideas on ways to reduce the amount of rubbish you produce, visit www.bookofrubbishideas.co.uk





SHOULD I BUY FARMED OR WILD FISH?

Our oceans are suffering from chronic overfishing – but are fish farms any better for the environment? **Matilda Lee** weighs up the piscine pros and cons in the battle to save world fish stocks from collapse

Imagine a ship so big it runs the length of an entire football pitch, with fishing nets large enough to engulf two Millennium Domes and its own on-board factory freezing plant. If you ever see one of these floating sea monsters, you will begin to understand why 30 per cent of world fisheries have collapsed, while 70 per cent are fully exploited or worse. It is predicted that all world fisheries will collapse by 2048.

That's right. Collapse. Over roughly the past 50 years, the rise of industrial fishing fleets and the technology created to help them operate have ensured that there is nowhere left for fish to hide. While accounting for only 1 per cent of fishing vessels worldwide, industrial fleets take more than half the global catch of 80 to 90 million tonnes per year, according to Greenpeace. A 'super seiner' fishing vessel, for example, can catch in just two days what it takes a fleet of small boats and canoes from a traditional fishing community an entire year to catch.

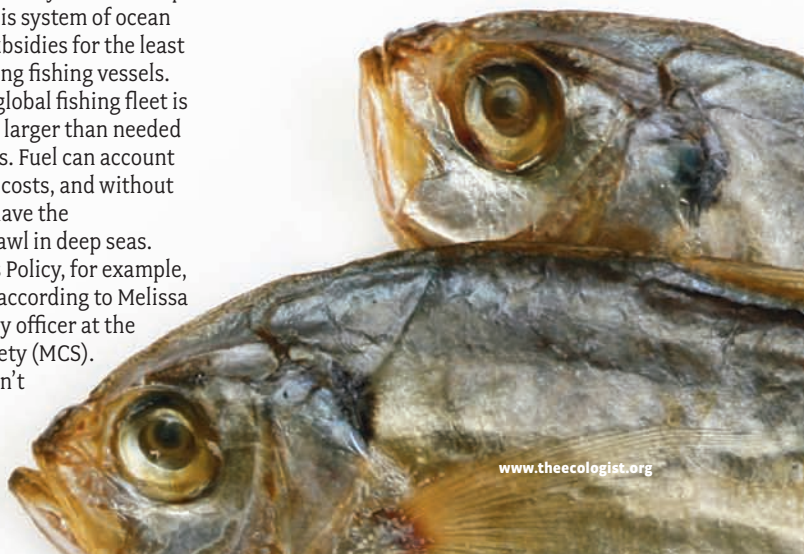
Industrial fishing is also intricately linked to wildlife destruction, as methods such as bottom-trawling scrape the sea floor of vital

marine life; large-scale driftnets, while illegal, still threaten many marine mammals. (*Fishy Business*, an excellent short documentary on driftnetting and what it is doing to swordfish and dolphins in the Mediterranean, can be seen at www.whaletrackers.com). Many industrial fishing methods are indiscriminate, resulting in some 27 million tonnes of dead and dying creatures, snared as unwanted bycatch, being thrown back into the oceans every year. Industrial shrimp-trawling is one of the worst cases: some 20lb of unwanted bycatch may be landed for every 1lb of shrimp.

Governments ensure this system of ocean rape continues through subsidies for the least efficient and most damaging fishing vessels. According to Oceana, the global fishing fleet is an estimated 250 per cent larger than needed to fish at sustainable levels. Fuel can account for 50 per cent of running costs, and without subsidies ships wouldn't have the wherewithal to bottom-trawl in deep seas. The EU Common Fisheries Policy, for example, primarily subsidises fuel, according to Melissa Pritchard, a fisheries policy officer at the Marine Conservation Society (MCS). This policy, she says, 'doesn't

incentivise the industry to change to more selective fishing gear that also uses less fuel'.

Presumably, then, farming fish is part of the answer to help take pressure off exploited stocks of wild fish? Farmed seafood now provides 42 per cent of the world's seafood supply, and is on target to exceed half in the next decade, according to Brian Halweil of Worldwatch. In Asia, fish-farming has been practised for thousands of years in a closed-loop system, where vegetable scraps and crop residues are used as feed, and fish



waste is used to fertilise rice farms.

Sadly, the fish-farming of today has more in common with the factory farms for meat, eggs and dairy: generating large amounts of waste and entirely removed from ecological systems (see 'Fishy business', page 24). Scotland's salmon aquaculture industry, which has grown exponentially in recent years, is estimated to produce the same amount of nitrogen waste as the untreated sewage of 3.2 million people, just about half the country's total population, according to Brian Halweil.

Perhaps one of the most unsavoury examples of fish-farming involves bluefin tuna, now overfished to the brink of commercial collapse. In the trials taken place so far, these huge and powerful fish have not responded well to being in captivity, and have had to be drugged with hormone implants, which are shot into them by divers with spears, in order to reproduce successfully outside their natural habitat.

A net drain

Modern fish-farming is actually a net drain on the world's seafood supply. Predatory species such as salmon, striped bass, tuna and shrimp feed on smaller species of fish, such as anchovy, herring, capelin and whiting, taking away an important source of human sustenance. As a report from the University of British Columbia's 'Sea Around Us' project notes, in 1948, only 7.7 per cent of marine fish landings were turned into fishmeal and fish oil. Now that figure is 37 per cent. It takes a huge amount of fish feed to harvest fish – approximately 4kg to produce 1kg of salmon, and 20kg of feed to produce 1kg of tuna.

Being merely wild or farmed is not a simple way to decide what fish to buy. The issue is tricky – here are four points to bear in mind:

- One of the most popular and regularly eaten fish in the UK is canned tuna. Most tuna is caught using methods that cause significant bycatch, or target juveniles, and all stocks of all species of tuna are fished at full capacity. If buying tuna, look for the MCS logo, make sure it is skipjack or buy from a responsible canned fish company such as Fish4Ever.

- With farmed marine species, go for smaller

fish lower down the food chain, or shellfish (mussels, scallops and oysters, which feed on things that naturally occur in water and improve water quality – not tiger prawns), and herbivores such as Tilapia (farmed in the UK in lakes) and carp. Organic is better than non-organic, as stock densities are limited, feed sourced sustainably and use of chemicals and sea lice treatments restricted.

- Not all wild fish are off limits, but be choosy about origin and how it was caught. Go to www.fishonline.org for lists of which to avoid and which to eat. With salmon, for example, five species of Pacific salmon caught in Alaskan waters are MSC-certified – a much better choice than Atlantic salmon, stocks of which are severely depleted. Take pressure off the overfished species such as tuna, shrimp, salmon, haddock and cod by choosing lesser-known alternatives such as dab.

- Use your voice to change the policy on fishing and marine issues – see box below.

For sustainable fish recipes from the head chef of pioneering eco-restaurant The Water House, Marie Gonfond, see www.theecologist.org/food

You really do need to be a fish activist

Why let a small, oversubsidised group of people ruin it for everyone else? Get your money's worth as a taxpayer by influencing government policy and corporate practice

- American actor Ted Danson, of *Cheers* and *Three Men and a Baby* fame, has been actively campaigning on marine issues for more than 20 years, and in the 1980s co-founded the American Oceans Campaign, which merged into Oceana in 2001. Oceana is the largest international advocacy group focused on the issue, and through its campaigns aims to produce results within five years. 'We do know what is wrong with the oceans,' says Danson. 'Oceana was founded on the premise that consumer behaviour is not sufficient. Only government

has the ability to make big change quickly.' www.oceana.org/europe

- Greenpeace is campaigning to set up a global network of marine reserves in order to protect battered ecosystems and give threatened species time to recover. It is also calling for an immediate halt to deep-sea bottom-trawling.

www.greenpeace.org.uk/oceans

- The Environmental Justice Foundation's Save the Sea campaign aims to bring an end to illegal fishing, including eliminating flags of convenience and driftnets.

www.ejfoundation.org

- WWF is campaigning to establish internationally recognised standards for 11 important farmed fish and shellfish.

www.wwf.org.uk

University of Aberdeen Graduate School

MSc Applied Marine and Fisheries Ecology: Concepts and Practices for Ecosystem-Based Management

Marine science is currently experiencing a paradigm shift in the way we manage marine natural resources and we can no longer manage our activities and the stocks that support them separately. The ecosystem-based management paradigm has been introduced to meet new challenges in marine resource management but there is not yet a universal consensus on how it can best be applied. This new one-year programme will equip students with the knowledge and tools needed to meet this challenge and find new solutions to manage our marine natural resources.

This interdisciplinary course offers a unique curriculum allowing you to gain both theoretical and practical experience. It also opens a path towards continuing further research work in marine ecology and fisheries sciences. The course is composed of compulsory and elective taught modules and research work. The interactive teaching uses a range of media: lectures, seminars, discussions and student debates, case studies, practical and field exercises.

A new course targeting new needs: the course places an emphasis on equally developing your biological and quantitative toolkits. Understand biological and ecological processes, learn new analytical techniques, and understand how to apply those to manage natural resources. You will be exposed to economists, ecologists, fisheries biologists, and conservation biologists to gain a profound understanding of the notion of sustainability.

Cutting-edge and Real World Applied: Both professional practitioners and academic staff are involved in teaching. A strong component of the course involves direct teaching and research opportunities with the staff at the Fisheries Research Services Marine laboratory. Other agencies represented include the Joint Nature Conservation Committee and Scottish Natural Heritage.

Professional benefits: gain added-value experience through the possibility of participating in FRS surveys onboard the FRV Scotia. You are also given the opportunity to obtain your sea survival certification.

Decide on your specialisation: the course offers both required and optional modules allowing you to gain further specialisation on your preferred subjects. Options include Ecological Modelling, Marine Top Predator Ecology, Remote Sensing and GIS in the Environment, Statistical Analysis, Marine Ecosystem Biology, Aquaculture, Environmental Economics and much more!

The School of Biological Sciences has an international reputation for excellence in inter-disciplinary research in ecology and was graded 5 in the 2001 Research Assessment Exercise. We represent one of the largest concentrations of internationally recognised marine and terrestrial ecologists with expertise ranging from individuals, to populations, communities and global processes.

Bursaries: There are 5 bursaries, each worth £1000 from the Fisherman's trust and one £3000 bursary from the Fishmongers' Company. SAAS also offers a number of bursaries. All bursaries are towards fees for one year of postgraduate study. For further information please visit <http://www.abdn.ac.uk/fisheco>



**UNIVERSITY
OF ABERDEEN**

Better Booze

If you don't know what's gone into making your drink, stick to organic beer and wine this Christmas, says **Pat Thomas**



It's that time of year again. Party time. A time of good cheer. Time to hoist one in honour of the old year and in hope for the new one. The holiday season is traditionally a time of alcoholic indulgence – and there's no exception here at the *Ecologist* offices. Regular readers of Behind the Label will know what's coming next, of course. Just one simple question: do we need to poison ourselves in order to have fun?

According to the International Agency for Research on Cancer (IARC), several components and contaminants identified in beer, wine and spirits are known or suspected human carcinogens, including aldehydes, nitrosamines, aflatoxins, ethyl carbamate or urethane, asbestos and arsenic compounds. It is as scary as it is unnecessary, since good alternatives exist for wine, beer, cider and spirits – the UK's Soil Association has more than 50 organic alcohol producers on the books, and more and more of these are at prices that compare favourably to conventional booze.

If you are a wine fan then you should know that conventionally grown grapes rely heavily on the use of pesticides and synthetic fertilisers. Earlier this year, a Pesticide Action Network report entitled 'Message in a Bottle' found traces of as many as 10 different pesticides in wines on sale in the EU. Lab tests on 40 bottles showed 'substantial evidence' of widespread contamination, and some of the 24 pesticides detected in total are listed as potential carcinogens by EU health authorities. Wines tested included 10 each from France and Germany, and also bottles from Portugal, Chile, South Africa, Austria, Australia and Italy. All were on sale in the EU and three cost more than €200 per bottle.

Apart from being kinder to the environment, some

types of organic alcohol may even be healthier than their conventional counterparts.

Organic wine, if it is minus the sulphites – not always a guarantee – may give you less of a hangover than traditionally preserved wines. It is believed that around 1 per cent of the population is allergic to sulphites, which can also cause an itchy nose and congestion.

Wine not?

Better than this, however: organic wine may contain more health-promoting antioxidants than conventional wine. Studies comparing organic red wines and conventional red wines have shown that organic wines have the highest amounts of resveratrol. Resveratrol is produced in the skins of dark-red fruits to prevent fungal attack. Besides being an anti-fungal agent, it is a powerful antioxidant linked to the decreased risk of cardiovascular disease associated with the moderate

consumption of red wine. It may also have anti-cancer properties.

In testing, organic wines average 32 per cent higher resveratrol levels than their conventional counterparts.

An Italian study has suggested that an organic wine's carbon footprint is half that of a conventional wine because fewer chemicals are used.

Beer in moderation, like red wine, does have health benefits. The malt and hops used in both lager and bitter

contain flavonoids, which counter cell damage and help reduce the risk of cancer and heart disease. Dark beer especially can contain useful amounts of B vitamins. If you are drinking beer that is not certified organic, however, you will most likely be imbibing other chemicals as well. On average, non-organic hops are sprayed as many as 14 times a year with 15 different pesticides. Then there are residues from farming processes, storage/preservative requirements, several of which are carcinogenic, as well as the residues of industrial cleaners, and flavours, colours and preservatives such as beta glucanase, ammonia caramel, sulphur dioxide, protease, amyloglucosidase, propylene glycol alginate and silicone. Many believe these additives dampen the flavour and give you hangovers.

As with everything else we consume, beer has a footprint. According to a report by Sustain, the ingredients from locally brewed beer may travel as little as 600 miles, whereas beer from a major German brewer could clock up 24,000 miles in terms of ingredients and product. So to cut down on your beer miles as well as avoiding major contaminants, consider partying with local and organic brands (see *Ethical Consumer* magazine's 2006 ethical shopping guide to bottled beer and lager – www.ethicalconsumer.org).

The UK is an apple-growing nation and good, traditional cider is made by a simple method. It is the fermented juice of the apple, with nothing added and nothing taken away. Cider can suffer from the same contamination problems as beer, though. The Campaign for Real Ale, CAMRA, now also campaigns to promote traditional cider and perry (pear cider).

Finally, if you like something with a little more kick, organic whisky, gin, rum and port are becoming more widely available.

As always, you do have a choice and control over what you choose to put in your body. While the notion of an 'eco-party' may sound a bit dry and worthy, there are good reasons at least to try not to have your holiday bash turn into a chemical cosh. Here's wishing you all a happy – and healthy – holiday season.



Hungover but healthy

- The Organic Wine Company
www.theorganicwinecompany.com
- Organics Direct
www.organicsdirect.co.uk
- Organic Champagne
www.organic-champagne.co.uk
- Revital
www.revital.co.uk/organic_alcohol
- Sedlescombe Organic Vineyard
www.englishorganicwine.co.uk
- Pennard Organic Wine and Cider
www.pennardorganicwines.co.uk
- Campaign for Real Ale
www.camra.org.uk

ETHICAL CHRISTMAS IDEAS

In the seemingly endless whirl of seasonal parties and shopping trips, you may be more concerned with saving your sanity than saving the planet. But with a little forethought – such as investing in Fairtrade and the Soil Association organic certified goods – the things you buy and use this holiday season can continue to contribute to a greener, more sustainable world.

The following pages contain some great suggestions to make eco parties go with a swing and keep family and friends delighted, while reflecting your own individual eco standards.

Eco Outlet

Whether your party-throwing or gift-giving this festive season, wine-drinkers will love these stylish glasses made using reclaimed wine and mineral water bottles.

ECOUTLET's glassware range also includes tumblers (£3.50) and glasses (£7) made from beer and soft drinks bottles. In fact, whatever your tipples are, we've got the recycled glass to match.

www.ecoutlet.co.uk



Eco Christmas party supplies

Throwing a party this Christmas? Forget awful plastic forks and polystyrene cups that languish in landfill, throw a gorgeous get-together that's kind to the earth with ECO MY PARTY's unique range of 100 per cent biodegradable party supplies.

Sip mulled wine from our compostable cups and serve up your mince pies on a



biodegradable plate (£2.50, pack of 10), or make your whole party eco-chic with our Festive Party Packs (£17.50).

The best thing of all is the fact that our stylish and ethically-sourced partyware is so natural that when your party is over, you can chuck the whole lot onto your compost heap and use it to grow the flowers and food for your next celebration. Party like there is a tomorrow!

www.ecomyparty.co.uk

Eco-friendly wines

Drink ethically over the festive season. Raise your glass with friends and family safe in the knowledge that you are supporting the sustainable winemaking practices of small Italian vineyards. ECO-FRIENDLY WINES handpicks quality organic Italian wines, which have come to life thanks to the winemaker's passion, pride, hard work and commitment to respecting the natural resources required to make them.

But we don't want to stop there. Our intention is actively to pay attention to many other environmental aspects of our business. This is why we are particularly pleased to offer our 3-litre bag-in-box organic wines. Great quality, great convenience and a greatly reduced carbon cost. Perfect for parties – and served in a carafe, perfect for the dinner table, too.
www.eco-friendlywines.co.uk



Natural Grocery Store

Enjoy your Christmas and New Year festivities in an organic and ethical manner.

We have a complete list of organic meat, poultry and vegetarian

options – our organic turkeys cost £10.99 per kilo. We have everything that a host or hostess could wish for.

To place your order, visit the NATURAL GROCERY STORE website and click on the 'Christmas' button. To speak to us, call 01242 572323, or visit our Cheltenham store, open 8am-10pm every day.

www.naturalgrocery.co.uk



DIY Fairtrade hampers

Whether for yourself or as the perfect festive gift, you can choose what goes into your fantastic Fairtrade hamper.

GOODNESSDIRECT makes a preliminary selection for you, gathering all the mouthwatering seasonal Fairtrade options together in one place. All you need to do is make your choice, and your handpicked hamper is just one click away. If the hamper you're selecting is a gift, GoodnessDirect will wrap it for you, complete with a gift card and handwritten greeting.

www.goodnessdirect.co.uk

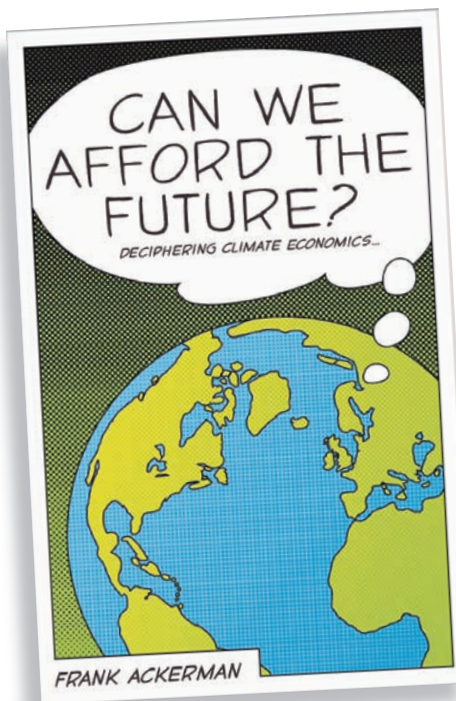
Why not treat someone you love to a gift that makes a difference? Many of us wrack our brains for ideas on what to get that certain someone who 'has everything'. Below are some suggestions for gifts with a definite feel-good factor – which in itself is priceless.

The holiday season is a time when the stress of looking for interesting and ethical gifts can almost be too much. Let the *Ecologist* be your guide...

Getting the big picture

Find something interestingly serious this Christmas with the new book by Frank Ackerman, *Can We Afford the Future?* (£12.99). Other recent titles include *Kyoto2: How to Manage the Global Greenhouse* by Oliver Tickell (£10.99).

For details and information on more Zed Books titles, call 020 7837 4014 or go to www.zedbooks.co.uk



Trees for life

TREES FOR LIFE, the award-winning charity dedicated to restoring the Caledonian Forest, is offering a range of online discounts on its Christmas gifts. Buy 12 winter greetings cards for the price of six (£5), and a Christmas Tree Gift Card, each representing a tree planted (£8, down from £10). Buy a Trees for Life calendar and diary and get free postage and packing worth £3.20 – to claim a further discount of 10 per cent, phone 0845 458 3505 and quote 'Ecologist reader offer' or visit the website and type in 'Ecologist'. Offer ends 31/01/09.

Printed on recycled stock using at least 50 per cent post-consumer waste and vegetable-oil based inks, all proceeds go directly towards tree-planting in the Scottish Highlands.

www.treesforlife.org.uk

Black Isle

It's official! BLACK ISLE BREWERY brews the best organic beer according to some of the UK's top restaurateurs and food writers. Winner of the 2008 Soil Association Organic Food Awards, Yellowhammer IPA and any of the other delicious award-winning beers, can be delivered anywhere in mainland Britain from less than £2.40 per bottle. Visit the website or phone 01463 811871. Also available from our online brewery shop is organic beer soap and delicious handmade organic beer chutneys. www.blackislebrewery.com



Natural luxuries

Liquid African Black Soap with frankincense and patchouli (250ml, £6.95) from AKAMUTI is a beautifully creamy and natural soap that looks like melted chocolate. Fragranced with precious oils to energise, cleanse and condition, its rich, creamy nature and high wildcrafted shea butter content makes it ideal for conditioning dry, eczema-prone skin. A fantastic hand and body soap. www.akamuti.co.uk



Earthbound Organics

Jasmine and Honey Body Cream (120ml, £18.50) is a light, sensual body cream, new from EARTHBOUND ORGANICS. Containing camelina and gotu kola, rich in vitamins and antioxidants, it leaves your skin soft, supple and silky. Call 01597 851157 or see www.earthbound.co.uk



Eco t-shirts

EKO NOIZ handprints great messages for the planet on to organic cotton t-shirts, baby clothing and shopping bags. Its 'eco-warrior wear' range of t-shirts also includes eco-fibres such as hemp, bamboo and recycled plastic bottle fibre. The most colourful, witty and reasonably-priced (£23- £26) ethical t-shirts to be found – a great present for green-minded friends and family members this Christmas. www.ekonoiz.com

Future Forest

Aiming for sustainability, FUTURE FORESTS makes reasonably priced trees readily available. We have been sending quality plants throughout Ireland and the UK for more than 25 years, and supply a huge range of native and ornamental trees, fruit, shrubs, hedging mixtures and so on, including rare and old-fashioned varieties. Choose a living gift for family, friends or just yourself. Call 00 353 27 66176 or visit www.futureforests.net



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We believe in working in harmony with nature, not against it. 100% of our products are certified organic by the Soil Association.

Our products are made for those who want both beautiful and healthy skin. 'Made for Life' – with no chemicals, parabens or nasties – our natural organic ingredients promote health and wellbeing for your life and the environment.

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We have just finished putting together our 100% organic Christmas gift boxes. The boxes are made from recycled card, designed to complement our new Cornish branding, with a unique fold-out glueless design.

This means that at Christmas, you can give your loved ones 100% organic, chemical-free, beautiful products, which are good for the skin and the planet: our gifts don't cost the Earth.



MADE FOR HER AT CHRISTMAS £49

(Normal RRP £62.50)
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 100ml Floral Skin Toner
 30ml Rose & Vanilla Face Oil
 Organic Cotton Flannel
 Christmas Cinnamon Soap

MADE FOR HIM AT CHRISTMAS £49

(Normal RRP £62.50)
 50ml Nourishing Face Balm
 100ml Men's Body Oil
 50ml Shave Oil
 Christmas Cinnamon Soap

MADE FOR PAMPERING AT CHRISTMAS £60

(Normal RRP £89.50)
 100ml Soothing Leg & Foot Balm
 100ml Sweet Orange & Ylang Ylang Bath Oil
 100ml Body Softening Oil
 100ml Head & Hair Oil
 Christmas Cinnamon soap

MADE FOR LUXURY AT CHRISTMAS £60

(Normal RRP £83.50)
 50ml Calming Lavender Room Fragrance
 100ml Sweet Orange & Ylang Ylang Bath Oil
 100ml Body Firming Oil
 200g Lemongrass & Marigold Body Scrub
 Christmas Cinnamon Soap



The 100% organic petals and herbs are macerated on a bed of warm stones for a full lunar cycle. The gift boxes are tied with ribbon, dried orange and cinnamon to give a heavenly Christmas aroma. Louisa, our production co-ordinator, has also prepared a Christmassy cinnamon soap for inclusion with each gift set. All gift boxes ordered before 15 December will arrive for Christmas,

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Its pocket-sprung mattresses are 100% certified organic by the Soil Association.

Abaca products are handmade in Wales, with wool sourced from Welsh farms. Wool is a natural fire retardant (it won't smoulder until 400°C) so there is no need for chemicals. All Abaca's bedding meets fire safety standards (BS7177).

Baby mattresses are also available and can be made to any size or shape to suit cots, cribs and baskets.

www.abacaorganic.co.uk



HOW TO ORDER: Phone: 01269 598 491, email info@abacaorganic.co.uk or write to **Abaca Ltd, Unit 1, Ty Croes Business Park, Ammanford, Carmarthenshire, SA18 3RD, Wales, and quote offer code 'Ecologist'.**

Offer ends: 31/01/09.

READER SURVEY: PRIZE-DRAW

For your chance to win a GoodnessDirect.co.uk Festive Fairtrade Hamper, just fill in the Reader Survey inserted in your copy of this month's *Ecologist*, and send it back to the freepost address by 16 January 2009.



ENVIRONMENTAL JOBS

Search Ecologist Recruitment online for new employment opportunities.

To post your job visit www.theecologist.org/pages/jobs.asp or call

020 7422 8100

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Supplies the fruit and vegetables for the staff at the Ecologist's office.

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www.farmaround.co.uk

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- step 1: pick the products*
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- step 3: we wrap & deliver it*
- step 4: you celebrate!!*



* 20% OFF your next order, simply enter the code 32233NDX when checking out. Offer ends 31/01/09. Offer does not include chilled, frozen or fresh food. Offer limited to one order per household

GoodnessDirect.co.uk

Food & 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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ECOLOGIST

Home & Garden

From garden tools to bed linen, cleaning products and furniture – we can reduce our carbon footprint and the chemical cocktail that makes its way into our homes simply by changing our household buying habits. So visit the online producers below for ideas on how to green your home



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Orange Mate is a 100% natural, versatile cleaner made using Orange Oil. It comes in 2 strengths. Use the Concentrate neat as a degreaser. Dilute it 10:1 to refill the trigger spray surface-cleaner, up to 11 times. That's 10% of the normal cost & saves up to 11 bottles!

All Earth Friendly Products are made using plant extracts and are free from petroleum, chlorine, ammonia, phosphates, caustic soda, formaldehyde.

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annual bill

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Turning electricity bills into windmills

[†]Source: Source: Uswitch comparison site. The annual bill shown is based on 4MW of consumption per annum for a typical household on a single rate meter. The figures shown are the average cost across all regions in the UK as prices do vary from region to region. Please contact Ecotricity for more information and an up to date quote on 08000 302 302. Both tariffs are 100% green energy sourced and are backed by Renewable Energy Guarantees of Origin which means that for every unit of electricity you use, a unit of renewable electricity has been fed into the electricity network. ^{††}Source: whichgreen.com. £462 is the average annual investment per customer over the last 4 years.

The Recycle Warehouse

“Where every product is made from recycled materials.”



At the Recycle Warehouse we have simple principles:

Sustainability comes first, profit comes second

Business has to lead the way in the war against climate change

www.therecyclewarehouse.com

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Kirk doesn't know that Maria knows. Does Maria know if Kirk knows?

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An ecological adventure story, set in the future, involving four teenagers.

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Meating of minds

I was compelled to write to congratulate you on a really excellent article ('Getting to the meat of the matter', October). It was a tonic to my soul.

As director of an ethical skincare company, my passion lies in sustainability, both in trade and farming. I also happen to live on a small farm, which nurtures my great love for the countryside. Unfortunately my passion for sustainable farming seems somewhat at odds with the urban 'green' and 'eco-conscious' movement, where raw food, vegan and vegetarian lifestyles are heavily promoted.

I find it shocking that organisations such as the Vegan Society and Viva! are effectively running an anti-farming hate campaign that is both shortsighted and dangerous. I was horrified by the 'silent but deadly' advertising campaign run by the Vegetarian Society.

As you rightly point out, it is very difficult to marry veganism with a sustainable approach to managing the land, and farming in general. One of my favourite books is the *Secret Life of Cows*, by Rosamund Young, who runs an organic beef farm in Worcestershire (Kite's Nest), where they live and breathe the principle that we are custodians of the land and its animals. Similarly, the biodynamic farmer readily affirms that the cow is the centre of the farm and central to the whole holistic method of planting by the moon.

Fighting climate change and promoting green issues cannot be achieved by destroying our faith in small farmers. I absolutely agree industrial farming is a completely different story, but it should in no way be the reason for a blanket approach toward all farms. I have not seen such a concise, intelligent overview of the whole sustainable eating agenda until reading your article today, so thank you for lifting my spirits. I thought I was alone.

Lindsey Hedges
by email

Veganism is the only way

Existing fertile land can adequately feed the Earth's population if we avoid waste and share its fruits wisely. Long-term production limits will be constrained by water supply and fuel costs – both aggravated by the inefficiencies of livestock rearing. The two skilful solutions to food scarcity fears are the reduction of our population and adoption of a vegan diet.

I am happy to embrace veganism because it is a positive part of the life-affirming vision I

LETTER OF THE MONTH

Meat is unsustainable

There is no doubt that meat and dairy are eco-villains ('Getting to the meat of the matter', October), the only question is how dastardly a villain they are.

Simon Fairlie tries to downplay the damning findings of the UN FAO's 2006 report, 'Livestock's Long Shadow', which showed livestock was responsible for 18 per cent of global warming gases as opposed to the entire world's transport system at 13.5 per cent. He argues that taking off the effect of rainforest destruction reduces this amount significantly. The trouble is, rainforest destruction is accelerating – and meat and dairy are the driving forces for grazing land and animal feed. Eighteen million tonnes of soya are imported into Europe each year from the Amazon basin, not to feed people (though that would make more sense) but to feed our farmed animals.

Of course, meat and dairy's eco-destructiveness goes beyond global warming. The Worldwatch Institute also says that they are the driving force behind global deforestation, erosion, freshwater scarcity, air

and water pollution, biodiversity loss, social injustice, the destabilisation of communities and the spread of disease.

It is common sense that we should be growing crops to feed people, and not wasting precious resources by feeding them to farmed animals. The feed-to-food ratio for meat can never be 1:1, and this is why it will always be inefficient.

With world meat consumption and the number of farmed animals set to double by 2050, anything other than a rejection of meat and dairy from our diets is merely treading water.

Justin Kerswell
Campaigns manager, Viva!



live for – to live skilfully, walking lightly upon the Earth and avoiding needless suffering. To live for a sustainable future requires all who care to change their attitude to the animal world, away from commodities existing only for profitable trade. A true green awareness will require us to change, moving away from all animal products and towards veganism, as far and as fast as our skills permit. It's the only option that is truly congruent with our values and our vision.

Mervyn Carter
Colchester, Essex

Ecologist for government!

It seems to me that it would be a great idea if the *Ecologist* were available in every ministry of every developing country in the world, in order to inform those in government and to empower them with up-to-date issues that are more pressing for these countries than the

more developed world. What this would cost I do not know, but surely a tiny fraction of the amount being thrown at research into vaccines for HIV, malaria and so on, which do not solve the immense environmental problems facing all of us. A monthly issue sent to governments or government agencies around the world could do much good to increase environmental awareness. Keep up the good work.

Sean Fuller
Castries, St Lucia

A question of time

Recently Dr Stephen Hawking, the greatest mind in physics since Albert Einstein, posed this question: 'In a world which is in chaos politically, socially and environmentally, how can the human race sustain another 100 years?' A little later he answered himself: 'I don't know'. In other words, we and our one and only Earth are in a hell of a mess.

Send letters for publication to: Letters, the Ecologist, Unit D102, 116-118 Commercial Street, London E1 6NE.
Email: letters@theecologist.org. The Ecologist reserves the right to edit letters as necessary.

We could examine any one of an already long and lengthening number of problems – the trillions of US dollars spent worldwide annually on armaments, growing poverty and the spreading HIV/Aids epidemic, the energy crisis, climate change/global warming and the rapidly melting Arctic ice, which may be gone in a few years and with it the polar bears (the last time this happened to the ice was 8,000 years ago); environmental destruction, worsening freshwater shortages, our plastic world, impending global financial disaster, US vice president Dick Cheney's disastrous foreign policy and the sick scam about weapons of mass destruction in Iraq... you can add your own problems – but I keep returning to three items that lie at the heart of this worldwide crisis of vast and gross disparities:

■ An all-powerful dysfunctional economic capitalist system of growth and greed before people, has triggered enormous destruction through the wholesale promotion of consumption, materialism and waste.

■ Earth's varied and complex natural ecosystems, on which all life depends and on an understanding of which the whole human endeavour should be based, are treated as both limitless and, for the most part, free.

■ Growth, as we know it, a product of the Industrial Revolution and vigorously promoted at every turn by officialdom, is literally killing us.

The issue now facing our civilisation is simply one of survival. After studying these global problems for more than 20 years, it is my opinion that unless all governments fully recognise our situation and put their countries on a global survival footing this civilisation's destruction is assured. The only question is one of time.

Derek J Wilson
 Wellington, New Zealand

Canatxx-rated behaviour

Although Joss Garman's article ('This is big', November) gives encouragement to opponents of major projects that hit the national headlines, I wonder how much this will apply at a more local level?

In October 2007, after a long and expensive planning process, public enquiry and appeal, the Secretary of State turned down a planning application by US company Canatxx to create underground caverns for gas storage under the river Wyre in rural Lancashire.

Undeterred, the company announced its intention earlier this year to reapply for planning consent, has held a public exhibition to promote its cause and is now ploughing ahead with a major construction project in the fields by the river.

ECOLOGIST POLL

Go to www.theecologist.org

Q: Do the social benefits of tourism outweigh its environmental impact?

81% say GM food isn't a safe and effective way to tackle world hunger and food security

At best, Canatxx is confident that the new planning rules for major infrastructure projects will enable its scheme to make progress without any local interference. At worst, it knows the wheels of government have by now been sufficiently oiled for it to gain the support it needs at the top. The decision regarding Donald Trump's golf resort [in Aberdeenshire] must have had it laughing all the way to its investors.

The local action group (www.pwggroup.org.uk) fought the original plan tooth and nail. Are they now wasting their time?

Roger Baker
 Preesall, Lancashire

Post waste

Thank you for a greatly improved *Ecologist*. I like both the new layout and higher-quality content, and I'm happy to have just subscribed for another year. One thing bothers me, however: on the envelope the magazine arrives in sits a stamp that says *Direct*. New Zealand. By *Airmail*, yet on the first page I find that the magazine is printed in England, just across the North Sea from Sweden, where I live. You can't seriously be sending the magazine to the other side of the globe (by air?) just to send it back the other way (by air!).

Philipp Weiss, Uppsala, Sweden.

Assistant publisher Kristen Harding replies: Rest assured the magazine takes the shortest route possible to get to you. Our mailing house uses a system called ETOE (Extra Territorial Office of Exchange) in order to get the best rate of postage. This allows them legally to purchase postage from New Zealand and other countries and apply it to post leaving the UK. To clarify, your magazine was posted from the UK and sent directly to Sweden.

Clearing the air

Laura Sevier's article 'How to... improve indoor air quality' (November) was excellent. It highlighted the problem of hazardous air pollutants in the home. May I add that a source area of pollutants that is sometimes overlooked is the garage. If this is a poorly ventilated area, benzene can escape from the car exhaust, crankcase and carburettor. There are usually many routes for it to move from the garage into the living area. Benzene is a particularly nasty volatile organic compound, often linked with childhood leukaemia.

Lyn Wood,
 Surrey

From nuts to balls

The nuclear industry is now using Squirrel Nutkin as the latest tool in the nuclear greenwash offensive. Studsvik UK has sponsored 'Save our Squirrels' to great fanfare. Personally, if I were a red squirrel I would want nothing to do with the controversial radioactive metal 'recycling' plant. Against the wishes of local people and businesses, Studsvik has introduced a nuclear process into a part of Cumbria that was previously nuclear-free. It sounds great – recycling radioactive steel imported from



reactors – but this recycling involves huge amounts of water and chemicals. The radioactivity is not eradicated, it is spread over a wider area, and the water ends up back in our lakes and rivers. Meanwhile, the still-radioactive steel is put out on to the market and has probably found its way into everything from lift buttons to the pots and pans cooking our nut roasts.

Marianne Birkby
 Milnthorpe, Cumbria

www.theecologist.org/ETV



Now playing Fishy Business: how the fishmeal industry is harming Peru

Lost in translation

The way we present the fight against climate change can be as important as the fight itself. It ain't what you say, it's the way that you say it, counsels **Ed Gillespie**

There's a famous *Far Side* cartoon by Gary Larson in the first panel of which, captioned 'What we say to dogs', an irate owner is seen castigating an unfortunate canine called Ginger with a taste for trash: 'Okay Ginger! I've had it! You stay out of the garbage! Understand Ginger? Stay out of the garbage!'

In the second panel, 'What they hear', Ginger looks equally implacable, only this time his owner's speech bubble reads: 'Blah blah blah GINGER blah blah blah GINGER blah blah'. This is a wonderful lost-in-translation moment, where the poor dog is attentive to nothing but his own name, regardless of the context. I suspect something similar goes on in the minds of the public when activists, academics, analysts and political anoraks are banging on about our environmental challenges.

A few years ago I used to give presentations entitled 'Why communicating climate change is like selling Tampax to men'. Deliberately provocative, it was designed to spark interest at a time when working on climate change was still like wetting yourself while wearing a dark suit (nobody much noticed, though it gave you a warm feeling inside), but the point was a serious one. In the dark days of 2003, most of what the environment movement was saying was falling on deaf ears. People weren't tuned in the way they are now, hence the need for my admittedly crude analogy. Advertising for sanitary products is aimed at half the population, yet the other 50 per cent manage to ignore it, as it's not what psychologists refer to as 'front of mind' – it's filtered by the subconscious out as being 'not relevant'. Climate change seemed to have a similar effect, without what smart-aleck communicators call 'real cut-through'.

This was hardly surprising when there was a consistent apocalyptic tone to most climate communications, of Armageddon meets Doomsday with a dash of catastrophe. The recipe was negative, with fear as a bulk ingredient rather than a powerful seasoning to be used judiciously to avoid tainting the whole dish. While the public began to buy into the seriousness and urgency of the climate change message, there was and still is a sizeable contingent in the 'too big, too ugly, too scary, too late' camp.

Ed Gillespie is creative director and co-founder of Futerra Sustainability Communications
www.futerra.co.uk



Guilt is largely counterproductive in attempts to encourage behaviour change.

The public is also increasingly sceptical of solutions failing to match the scale of the problem. We reiterate that climate change is 'the biggest collective challenge we have ever faced'... while implying – and politicians are particularly guilty of this – that it's solvable by changing light bulbs, half-filling the kettle and offsetting flights... an explanation that the public rightly perceives as pissing cynically and ineffectually on to a very big house fire.

What we intend to do about climate change and how we talk about it both matter. The solutions must be interwoven with the rhetoric – getting it right is potentially world-changing stuff. The first problem is that the terminology of sustainability overall is at best confusing and esoteric, and at worst alienating and offputting. Wordsmiths and copywriters deliberate for days on the differences between 'denotative' meanings of words (the dictionary definition) and their 'connotative' associations (the feelings, images and emotions the words conjure up). We greens need to do the same.

Research Futerra conducted last year for our report 'Words that sell' exposed the huge gulfs that often exist between environmental and government 'tech-speak', and what the public actually interpreted the words to mean. Two that instilled particularly surprising responses were 'microgeneration' and 'non-essential flying'. We in the green world place great stock on microgen,

but our focus group didn't understand it, actively disliked it and thought it sounded 'a bit small', like the tiny energy sources found in mobile phones – which might explain why it doesn't resonate as a key component of a decentralised, renewable energy system (and what's that when it's at home anyway?).

The Government's references to 'reducing non-essential flying' created a bigger stir, respondents believing it referred to their 'non-essential' summer holiday flights – the opposite of the intention. Interestingly, the anti-airport expansion campaigners' use of the word 'spurting' to define non-essential flying divided the groups along class lines, with working-class respondents finding it 'witty and apt' and middle-class participants barely able to bring themselves to say it.

The second problem is that we need to communicate positive solutions that fit the scale of the challenge, that seize our attention and inspire and galvanise us into either taking or supporting more radical action. At present the two main political parties offer neither.

The Government has fudged the chance to capture the public imagination on climate change, leaving a messy hotchpotch of counterproductive and contradictory policies in its wake. Nuclear energy, for example, has done a convincing 'hokey-cokey' in and out of political favour. Similarly, the recent (arguably sound) initiative to lag lofts rather than hand out windfall tax cash – tackling a root cause of fuel poverty, not the symptom – was lost in a veritable cat's cradle of tangled messaging as the world economy went into meltdown.

The Tories fare little better, their specious talk of 'Vote Blue, Go Green' undermined by a lack of substance – a bit like biting into a liqueur chocolate only to discover it's been unscrupulously drained. The Conservatives may be benefiting from the Government's malaise, but it doesn't mean they're any good at the policies and language needed to solve the problem. We risk yet more public cynicism.

There's a glimmer of hope as the Lib Dems call for an 'Apollo Project' on renewable energy and the Greens create clamour for a 'Green New Deal'. Both parties are threatening to rein in economic gambling, organise our efforts and ingenuity behind a green technological revolution, generating hundreds of thousands of green-collar jobs in the process. This is the type of thinking we need more of: grand plans, bold visions and a challenge to the public that we can collectively solve this challenge with the right ambition, determination and commitment. But they have also got to get the language right or, like the *Far Side* dog, the public will fail to get the message and continue to metaphorically play in the bins.



The solutions must be interwoven with the rhetoric – getting it right is world-changing stuff

How the world responds to this period of financial instability will set the tone for the battle for the environment – the green new deal starts here

What the flux?

History will remember 2008 for its 'crisis of capitalism'. The crash on Wall Street was the game-changer in the US election race, and it could soon be remembered as the game-changer on climate change, too.

Overnight, the unthinkable became a reality: \$2 trillion was suddenly 'available' to save banks around the world. And yet ironically these sums seem utterly meaningless – a billion here, a billion there. What did become clear, was that the conceptions of the unthinkable, the absolutely impossible, suddenly became a reality. Overnight, norms were turned upside down. There are echoes of Tony Blair's speech following 9/11: 'The kaleidoscope has been shaken. The pieces are in flux. Soon they will settle again. Before they do, let us reorder this world around us.'

Again, 'the pieces are in flux' and the question mark is over how exactly the world responds. The climate crisis, seen as an overwhelming challenge, was put firmly into some sort of perspective by the economic crunch. Given the numbers involved with the bank bailouts, the funds now needed to stop warming and to make the transition to a clean energy system suddenly sound a lot more realistic.

The battle lines have been underlined in recent weeks, as the EU's climate package was up for negotiation. Some right-wingers, such as Silvio Berlusconi, responded typically, saying: 'Our businesses are in absolutely no position at the moment to absorb the costs of the regulations that have been proposed... It is

Joss Garman is an environmental campaigner and journalist



ridiculous that we are selling the right to pollute'. Meanwhile UN leaders, with funding from the governments of Germany and Norway, began spearheading a project for a 'green new deal' to promote a massive redirection of investment, away from the speculation that caused the bursting 'financial and housing

bubbles' and into job-creating programmes to restore the natural systems that underpin the global economy.

This year's figures show that approximately \$150 billion has been invested in renewables around the world, and the good news is that President-elect Obama has pledged to match this in the US alone. China too is awakening. While it's true that this year China overtook the US as the world's largest polluter, it also now has the fastest-growing clean energy sector in the world. In the past 12 months, China has installed far more wind

capacity than the UK has built ever. It had 156 per cent growth in its wind energy sector and became the fourth-biggest user of renewable energy in the world.

Swelling numbers of economists here in Britain are also starting to agree that we need a plan in the mould of Franklin Roosevelt's

'new deal' to kick-start clean energy and tackle what Andrew Simms of the New Economics Foundation terms 'the triple crunch of credit, oil and climate crises'. The Government's Renewable Energy Strategy (RES) could form part of the backbone of such a scheme. This strategy outlines how switching to renewables for as much as 40 per cent of our electricity within the next 12 years could create 160,000 new green jobs. This will require as much as £100 billion of investment, but with rocketing fossil fuel prices, increasing dependency on dodgy governments and pressure on land creating food-versus-fuel dilemmas, this sum looks ever-more reasonable.

As hope for a new approach has grown – not least in the election of Barack Obama – the voices of caution have grown louder. Professor Jim Hansen warned this year that we have passed what are safe levels of atmospheric carbon dioxide. He warned we need to go into net negative carbon emissions. His caution came as scientists predicted Arctic sea ice will have disappeared within five years. We are living in the most important 100 months in human history – what we do in this time will determine the nature of human life for centuries to come.

Another 12 of those months have just passed, with some opportunities grasped but many more neglected. Will 2009 be any different? It won't be if we don't make it so.



We are living in the most important 100 months in human history – what we do in this time will determine the nature of human life for centuries to come



The contraction of the global economic system bodes nothing but good for global ecosystems. Growth is dead – long live sustainability

Goodbye to growth

Banks are teetering. Car companies are on life support. The dollar is rising in value, not because anyone has faith in the US economy, but because other currencies are shedding confidence even faster. Chinese factories are closing by the thousands. Store shelves in Russia are bare.

Meanwhile, oil demand and prices are falling. People can't buy fuel if they don't have money, and most consumers have less real money in their pockets than they recently did.

The oil price has now fallen below the cost of bringing a new marginal barrel into production – but that new barrel won't be needed for some time. Meanwhile, depletion continues, production declines accumulate and investments in new production capacity are not being made. Call it capacity erosion.

When the world finally recovers from financial turmoil (and this could take years) and oil demand rebounds, the economy will bump up against energy supply constraints and energy prices will skyrocket, undermining the recovery.

The worldwide financial crisis, together with the decline in available energy, means that we have seen the final year of aggregate world economic growth – ever. This is a statement with breathtaking implications.

Richard Heinberg is a Senior Fellow of the Post Carbon Institute and author of *Peak Everything*



There are obvious objections. Maybe the wealthy nations could still wring out a few years of growth by increasing global economic inequality, but this is essentially what they did over the past two decades with corporate globalisation, and that strategy is losing steam.

Perhaps economic growth could still be maintained by redefining 'growth'. Why measure growth with GDP, rather than indicators related to health, education, and environmental integrity? If governments did this, and funded improvements in public services, growth might go on indefinitely.

Some argue that China's momentum cannot be stopped, and will continue to contribute to overall global growth for the foreseeable future. But will China really be immune to the economic plague?

I don't think so. So I'm going out on a limb here by saying categorically that growth is gone. Over. Kaput. Finished.

There will be an ocean of consequences. For those in the tiny universe of environmental NGOs, one of them is that the time for arguing against economic growth is over. Yes, everyone who understands our human

impact on the environment knows that it is essential that the world find an alternative to growth as currently defined; instead, the human economy must contract to a point that it no longer threatens the viability of ecosystems. This is the essence of sustainability.

But imagine telling someone who has just lost her job, 'You need voluntarily to further reduce your income and standard of living'. How will that go over?

Effective strategy demands recognition of the opportunities and limits of the historical moment. In this situation, it's helpful to tell people (including policymakers) how to deal effectively with their immediate problems in a way that is consistent with long-term sustainability. Anything else will be irrelevant at best, extremely unwelcome at worst.

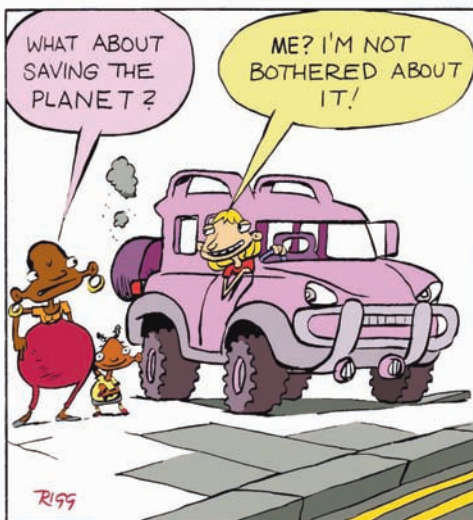
Growth is dead. Make the most of it. A crisis is a terrible thing to waste.



I'm going out on a limb here by saying categorically that growth is gone. Over. Kaput

GOOD BUY WORLD

PETER RIGG



Time to get serious

Weaning ourselves off dwindling reserves of fossil fuels and creating an alternative energy infrastructure are the focus of **Oliver Tickell's** Kyoto2 proposal

What can we expect of December's meeting of the UN Framework Convention on Climate Change (UNFCCC) in Poznan, Poland? The main question will be how to follow the Kyoto Protocol's first 'commitment period', which ends in 2012. As yet nothing is in place, and Poznan will not deliver any firm answers: the UNFCCC process has become sclerotic. Every change to the status quo is interpreted in terms of marginal profit or loss to the national interest of member states – not in terms of the need to achieve an effective climate agreement. National delegations adhere rigidly to entrenched positions. And the negotiations have become so Byzantine in their complexity that it has become impossible for anyone truly to grasp what is going on, and why.

Yet the conference could still do one useful thing: provide a space, constructed since the Kyoto Protocol was agreed in 1997, for delegates to think 'out of the box'. The treaty was certainly the best that could have been agreed at the time, but it has failed. Since it came into force in 2005, greenhouse gases have accumulated in the atmosphere at an accelerating rate. The 'flexibility mechanisms' that characterise the protocol may have created a dynamic global carbon market turning over \$13,641 million in 2007 – and rising – but they have done little, if anything, to slow the rise in emissions.

Let's look at how the Kyoto Protocol works, however. Developed, or 'Annex 1', countries were given targets to reduce their greenhouse gas emissions, to an average of 5.2 per cent below 1990 levels between 2008-2012. Other countries have no targets to meet at all, and most of the growth in greenhouse gas emissions have come from these 'non-Annex 1' developing countries, notably China, India, Indonesia, Brazil, Mexico and South Africa. A large part of their increase in emissions has come from industries moving from Annex 1 countries to other countries where emissions are unconstrained – while those industries mainly supply developed country markets.

Meanwhile, the 'flexibility mechanisms' allow Annex 1 countries to meet their emissions targets by buying into the carbon market,

Oliver Tickell is the author of *Kyoto2* and a longstanding contributor to the *Ecologist*



either taking up unused allocations from countries undershooting their targets, or from notional emissions reductions created by projects. Most important is the Clean Development Mechanism (CDM), which produces Certified Emissions Reductions (CERs), which countries can buy and set against their excess emissions.

These CERs are meant to represent additional emissions reductions relative to what would have happened in the absence of the project. However, the CDM Executive Board (responsible for approving projects) has been more concerned to create liquidity in the carbon market than to guarantee the quality of CERs. For example, huge volumes of CERs – approximately a quarter of the total – arise from hydroelectric projects, based on the idea that without CDM funding coal-fired power stations would have been built instead. However, almost all these hydro plants would have been built anyway: a study by International Rivers found that 96 per cent of the Chinese hydropower projects accepted or submitted for CDM registration would have gone ahead regardless.

So what is to be done? Some reforms are under way, but the basic structures of the Kyoto Protocol are set to survive despite some serious attacks, notably that of Prins and Rayner in *Nature* in October 2007: 'Kyoto has failed in several ways, not just in its lack of success in slowing global warming, but also because it has stifled discussion of alternative policy approaches that could both combat climate change and adapt to its unavoidable consequences... the rational

thing to do in the face of a bad investment is to cut your losses and try something different'.

So what is this 'something different' that we should try? It was to answer this question that I developed the proposals set out in my book *Kyoto2: How to Manage the Global Greenhouse* (Zed Books, 2008). Rather than trying to reform the failed Kyoto Protocol system, it sets out a new path that would be effective, efficient and equitable.

First, the most efficient place to control industrial greenhouse gas emissions is not where they are emitted, but 'upstream' – at or close to where fossil fuels are produced, or the factories producing other greenhouse gases such as the CO₂ from calcinating lime to make cement. As Peter Barnes writes in his book *Climate Solutions*, it is far easier to control the flow from a garden sprinkler system by adjusting the tap than by blocking up the holes the water is squirting out of. This approach also reduces the possibility of fraud and carbon accounting errors.



The most efficient place to control industrial greenhouse gas emissions is 'upstream'

Second, we need to drop the Kyoto Protocol system of 'territorial accounting'. If you have a factory in China, owned by investors in the USA, using Swiss technology, burning Indonesian coal, producing goods for export to the EU, on Liberian registered ships owned by Greek shipping magnates, to which country should the emissions belong? The best answer is to make the question irrelevant by abandoning territorial accounting. This also offers another advantage. Climate negotiations invariably deadlock as governments bicker over their slice of the emissions 'pie' – which is understandable, as governments have to deliver any emissions reductions to which they agree. Drop national allocations and governments are only responsible for administering a system. Whew!

So how should emissions rights be allocated if not by country? One approach is to give them out on a per person basis. This underlies the 'contraction and convergence' (C&C) approach promoted by the Global Commons Institute, for example – except that under C&C the rights would then be handed over to governments (coming back to national allocations). Other interpretations of this approach include 'cap and share' (C&S),

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To which country should emissions belong? Make it irrelevant by abandoning territorial accounting



permits sold at the ceiling price to be clawed back in future years.

The biggest problems arising are not so much in the system itself, but in how to spend the money fairly and effectively, while minimising waste and corruption, and creating the necessary institutions. The UNFCCC must stand at the centre as the treaty organisation, but most operational tasks can be devolved to implementing agencies, such as UN agencies, development charities, national and local government, community organisations and private companies. All these agencies would ultimately be accountable to the UNFCCC, and would have to conduct their operations in an open and transparent way.

But how practical is it to consider launching such a scheme on a recession-hit world? In my view, Kyoto2 would be an important way to help lead the world into a more prosperous future, as well as a cleaner one. An important ingredient of the current global economic crisis is high energy prices, and these high prices are caused in part by declining supplies of the high-quality and accessible fossil fuels – oil, gas and coal – on which the world now depends. If the global economy maintains its dependence on fossil fuels, energy costs are only going to increase over the long term as the scarcity of fossil fuels intensifies.

To move away from these fuels is ultimately inevitable – after all, they are finite resources – and if we move away from fossil fuels before they actually run out, creating an alternative energy infrastructure to take their place, it will save considerable economic

pain, and actual hardship. Raising the efficiency of our economies in using energy will also prove hugely economically beneficial. The money we save in having to dig ever more holes in the ground to get at fossil fuels – and ever deeper holes at that – will be money that we can spend on better things that will give us greater pleasure. There will also be a great many jobs to be had in making our low-carbon future a reality: the \$1 trillion per year is not going to disappear, but recirculate into the global economy in highly productive ways.

There remains a big question, though: how to get from where we are now, to where we want to be? There I have no easy answers. It will need the active engagement of business, of governments, social movements and, above all, of a committed and vociferous citizenry around the world to bring about the changes we need and make an effective global climate agreement happen. With your support, and your well-targeted clamour for change, perhaps Poznan could be the beginning of something, after all.

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promoted by Ireland's Feasta (Foundation for the Economics of Sustainability), and 'cap and dividend' (C&D), advocated by Peter Barnes in the USA). Under C&S, permits are given out to individuals to trade, and under C&D, the permits are auctioned by government and the revenues returned to citizens.

But this has an opportunity cost. We need substantial funding to address both causes and consequences. My rough costing concludes that a full package, taking in everything from researching and deploying renewable energy on a vast scale, to conserving tropical forests and peatlands, to financing research into geo-engineering solutions (in case they're needed to stave off runaway warming processes), could be financed with some \$1 trillion a year. With 33Gt (as CO₂ equivalent) of emissions amenable to upstream control, this sum can be raised on the basis of a carbon price of \$30 per tonne of CO₂ – around the current carbon price in the EU Emission Trading Scheme. Give this money away, whether to governments (as under C&C) or as tax rebates (C&D) and you no longer have it to spend.

So Kyoto2 proposes to sell the carbon permits by auction (in order to raise the best possible price), with a reserve price of \$30 or so, and use them to finance climate

solutions. At first the cap would be relatively loose, but would progressively tighten to reach zero net emissions by 2050, in line with the target to stabilise greenhouse gas concentrations at 350ppm, first advocated by NASA's Jim Hansen (see also www.350.org). The investments made in renewable energy and energy efficiency, backed up by demanding worldwide energy efficiency standards, would progressively wean the world off fossil fuels, so that, as the cap tightened and the price of permits at auction increased, the pain caused by a rising carbon price would diminish.

If carbon prices at auction rose much higher than \$30, it would have the effect of proving additional funds for even more rapid deployment of renewable energy technologies, and energy efficiency measures worldwide. It would be economically undesirable for permit prices to rise too high, too quickly, of course, as that would cause economic damage and real hardship. So we would also put in place a 'ceiling' price or 'safety valve' at which any

number of permits would be sold. This would also have the effect of bringing in huge additional sums for investment in our low-carbon future, enabling extra



Raising the efficiency of our economies in using energy will prove hugely economically beneficial



Kyoto2 proposes to sell the carbon permits by auction and use them to finance climate solutions

The extreme climate technologists behind monochrome schemes to slow global warming are one colour short of a palette

A green whitewash

It is hardly high-tech, but if Hashem Akbari is to be believed, a reprieve from the climate crisis might be found in a few million tonnes of white gloss emulsion.

According to Akbari, climate modeller at Lawrence Berkeley National Lab in California, the world could offset a year's worth of carbon dioxide emissions if all the roofs and roads of our 100 largest cities were painted brilliant white. Dazzled and confused by how exterior decorating could decrease greenhouse gases? Mostly, it won't. Akbari is part of an increasingly vocal band of extreme climate technologists, known as geo-engineers, who point out that our warming world is not just the result of too much gas in the atmosphere, but also too much sunshine trapped between those gases.

If we can't reduce the gas fast enough, they reason, how about turning down the sunshine instead?

Since nobody has yet developed an actual dimmer switch for the sun, most of these schemes amount to reflecting the sun's rays back into space – a project known as 'Global Albedo Enhancement'. Akbari claims that every 10 square metres of newly whitewashed rooftop has the same cooling effect as removing a tonne of CO₂ from the atmosphere. Unfortunately, since no actual CO₂ is removed, it's a one-hit wonder. After that first year of delayed warming, further surfaces would need to be painted to keep the Albedo effect going. Underwhelmed by the availability of ready-to-paint rooftops, other geo-engineers are now mapping out alternative plans to whiten the planet.

Such as growing whiter crops: agricultural crops inhabit 11 per cent of our land surface, but breeding or engineering

Jim Thomas is a research programme manager and writer with ETC group (www.etcgroup.org)



them to display whiter leaves might come at the expense of green. Trading the chlorophyll that absorbs CO₂ for increased reflectivity is not a smart move. Wrapping deserts in white plastic is another proposal floated by geo-engineer Alvia Gaskill, who would like to wrap 67,000 square miles of desert every year until 2060 to buy

enough time to reduce greenhouse emissions. He reckons that every square mile of plastic desert could offset the emissions of 7,000 SUVs. He has even floated the idea of issuing 'thermal credits' (akin to carbon credits) as a financial mechanism to encourage global whiteness. Once again, however, there is no actual CO₂ reduction involved, and Gaskill's glib proposal to subject the Sahara, Arabian and Gobi deserts to this shrink-wrap solution fails to account for the interests of pastoralists who live there. As for the fragile desert ecologies, Gaskill notes bluntly that all covered plant and animal life will die and that regional weather and wind patterns will shift. Ultimately, it's a 'solution' as fragile as the plastic it's made of. If the shiny, white wrapping were to come undone we might see a devastating jump in global temperature.

Then there is the iconic proposal to turn the sky itself white. In 1974, climatologist Mikhail Budyko proposed slowing global warming by releasing reflective particles at high altitudes from aeroplanes. Today, that idea has surprising heavyweight support from scientists including Paul Crutzen, the Nobel laureate who alerted the world to ozone depletion. Crutzen and others have noted that sulphur plumes from volcanoes, such as the 1991 Mount Pinatubo explosion, correlate with decreases in global temperatures. But white skies – like white deserts – would come at a heavy cost. According to scientists at the US National Center for Atmospheric Research (NCAR), extra particles in the atmosphere would massively increase ozone depletion. They would also likely change weather patterns, increase drought and may also kill off ocean plankton.

None of these proposals changes the underlying causes of climate change, since CO₂ emissions would continue to rise in a whiter world. Still, for politicians and industrialists, the idea of a great, global whitewash could prove an easier sell than overhauling our energy and industrial infrastructure. Whether daubed on your roof or shot into the skies, white might look cool but really, it ain't the new green.



Wrapping deserts in white plastic is an idea floated by geo-engineer Alvia Gaskill, who would like to wrap 67,000 square miles of desert every year until 2060



Ale and hearty

Homebrewed beer on tap in front of a renovated wood stove? It's the low-cost, low-impact way to the high life, says a thoroughly content **Tom Hodgkinson**

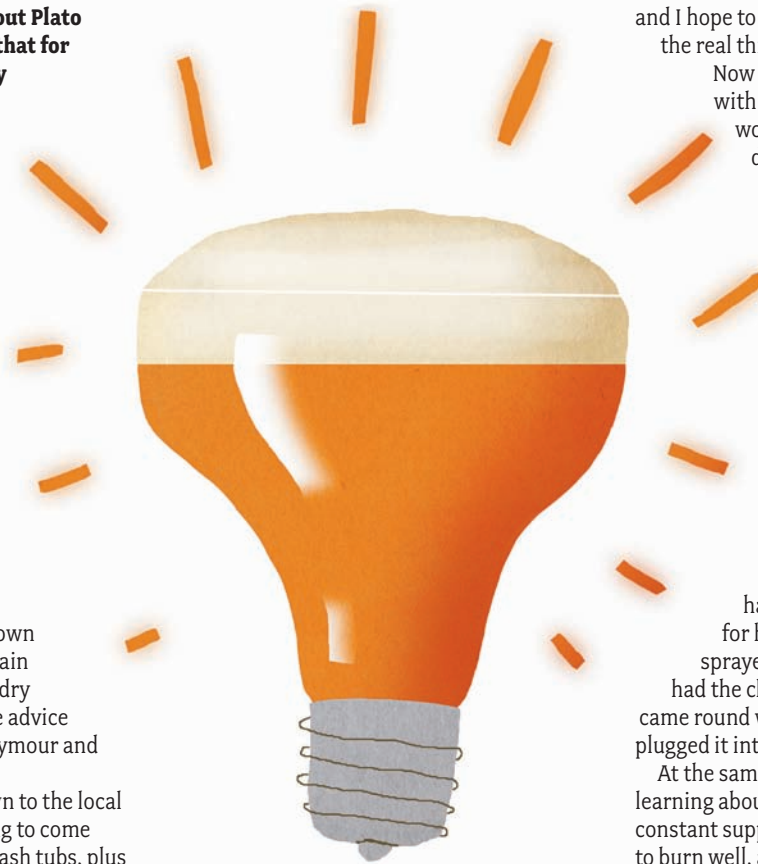
I've been thinking recently about Plato and his academies. It appears that for the ancient Greeks, philosophy and husbandry were the most important arts in life. The thing was to develop a particular kind of thinking and a particular kind of doing, both of which were conducive to untroubledness, tranquillity and satisfaction.

In my own life, I have been experimenting with two elements of husbandry: brewing and wood management. I realised I was spending an awful lot of money on beer. Now the puritan reaction to this excessive outgoing would be to make resolutions to cut down on the drinking, or even to abstain for periods. I prefer the husbandry approach, which is to follow the advice of William Cobbett and John Seymour and make your own.

To this end I took myself down to the local homebrew shop. I was expecting to come away with oaken barrels and mash tubs, plus a sackful of malt and barley and a few hops. Instead, they seemed to be more keen on selling the homebrew kits produced by breweries, and so I bought one of these for just under £20.

The first step is simply to mix two cans of goo together in a 25-gallon bucket, then fill up with six pints of boiling water and the rest cold. You sprinkle yeast on the top, put the lid on and leave it in the cupboard for a week. I then put the bucket on a chair on the kitchen table and siphoned the contents into a load of 500ml glass bottles that I had saved. It's a messy process, and you get a few mouthfuls of unfinished beer, but I enjoyed it. I should add that half a teaspoon of sugar is added to each bottle before pouring in the beer.

Following the siphoning,



the next task is to cap the bottles. I had bought 100 splayed red caps from the homebrew shop, plus an instrument that closes the caps on to the bottles when hit very hard, several times, with a mallet or hammer. In this way I produced for myself 42 bottles of beer, an extremely satisfying sight. I am going to save a fortune, as each of these bottles cost little more than 50p, whereas fine ales in the supermarket can cost close to £2 per bottle.

Now there is one small consideration remaining: what does it taste like? I can't yet offer an answer, since the bottles take two weeks to condition, and there is another week to go. The whole enterprise could fall down if I have produced something undrinkable. I also recognise that brewing beer from kits is not really proper brewing. I think it's a good start, though,

and I hope to graduate before long to doing the real thing.

Now on to wood. I'm feeling pleased with myself, as I renovated an old wood burner for my study. I discovered it not by searching on the internet and negotiating the horrors of eBay, but by using the simple technique for finding what you need that prevailed before the web. It's called Asking Around, and by Asking Around I came across an old rusty Belgian stove called an Efel Kamina for £50.

I scrubbed it with a wire brush and replaced the stove glass. I also replaced the fire rope that keeps the door more or less airtight. The man in the hardware shop put in some screws for holding the glass in. Finally I sprayed it black with stove paint. We had the chimney swept, and then a friend came round with some power tools and plugged it into the chimney.


At the same time I have been thinking and learning about wood. You need a good and constant supply. It needs to be well seasoned to burn well, and should have been left lying around for at least a year. The trouble is that most wood you can buy is not well seasoned. The stuff generally available at petrol stations, for example, is just terrible, so you have to think ahead and buy your loads a year in advance. There is free wood available, too: I collect fallen branches from the woods, and get free wood from skips and dumps.

With a good supply of beer and a good supply of wood, you can count this world's troubles at not a bean. You will always be warm and happy. And having looked after yourself in such a cost-efficient manner, you can read your philosophy books in front of the fire with an ale by your side.

Or you can indulge in what I consider to be the third element of a life well-lived, and that is merriment: open the beer, light the fire, invite friends round and have a feast.

Tom Hodgkinson is the editor of *The Idler* and author of *How to be Free* (Hamish Hamilton, £14.99)

“ I discovered the old wood burner by using the simple technique for finding what you need that prevailed before the web. It's called Asking Around



Put a
family
back
together
this
Christmas

All over the world, poverty and injustice are tearing families apart. But you can fund practical solutions to help put them back together.

In KwaZulu-Natal, South Africa, 18-year-old Nomfundo is bringing up her five brothers and sisters alone after they were orphaned by HIV/AIDS. Families like Nomfundo's are often split up by being put into state-run orphanages. But by making a donation to Christian Aid this Christmas you could help to pay for adult

community carers who will supply food parcels, clothes and emotional support.

Just £19 from you could buy a food parcel – and help stop poverty tearing a family apart.

Visit www.christianaid.org.uk/christmas call **0808 000 6006** or send a donation to Christian Aid, FREEPOST, London, SE1 7YY.

Please give generously and help put a family back together this Christmas.

christian aid We believe in life before death