Offsetting carbon emissions

The concept of offsetting your carbon emissions is controversial but beginning to take hold. **James Fair** explains how it works and assesses the main players in the market.

WHAT DOES 'OFFSETTING CARBON EMISSIONS' MEAN?

Every day, we release carbon dioxide, the gas that is the biggest cause of climate change, into the atmosphere as a result of burning fossil fuels. To offset these emissions, we can pay an organisation to absorb or reduce emissions elsewhere – either by planting trees or investing in energy-efficiency or renewable-energy schemes.

BUT IS CLIMATE CHANGE REALLY SUCH A BIG DEAL?

The consensus of climate scientists is that artificial levels of carbon dioxide and other greenhouse gases are raising the temperature of the Earth's atmosphere. One accepted scenario is that temperatures will rise by between 2 and 3°C by 2050 if emissions continue to increase at current rates. The impact this will have on both people and wildlife scarcely bears thinking about.

SO YOU HAND OVER SOME MONEY AND THE PROBLEM'S SOLVED?

Of course not. Everyone has to do more to reduce their emissions. But say you're an avid wildlife enthusiast and you dream of taking a trip to see the Masai Mara migration. By seeing wildlife in its native country, you are giving it a value and helping to conserve it. But you are also contributing to carbon emissions, and this is where offsetting comes in.

HOW DO I KNOW MY PAYMENT WILL OFFSET MY EMISSIONS?

Choosing the right offset organisation (see overleaf) is crucial. Most are monitored by independent bodies that check the emissions reductions you have bought really are being achieved, but only one – atmosfair – adheres 100 per cent to principles laid down by the 'Gold Standard' – a sort of Soil Association for carbon offset schemes.

HOW DO I CALCULATE EMISSIONS FOR A FLIGHT, SAY, TO KENYA?

Any of the organisations overleaf can do it with their 'carbon calculators', but there is a problem – estimates for a return flight from London to Nairobi vary from 1.26 to 4.68 tonnes of carbon dioxide. Dietrich Brockhagen of atmosfair, the organisation that comes up with the higher number, says other carbon calculators are too simplistic and therefore massively underestimate the true figure. Most aeroplanes, for instance, achieve greatest fuel efficiency when flying a distance of between 2,000 and 4,000km, but carbon calculators assume optimum fuel efficiency for all flights. They also fail to take emissions of other gases, such as nitrous oxide, into account.

WHAT ABOUT CALCULATING THE OFFSET? IS THAT SIMPLE?

Theoretically, yes. Take a scheme that invests in green technology, such as fuel-efficient cooking stoves. "All you have to do is work out how much energy the scheme creates and therefore how much carbon has been prevented from getting into the atmosphere," says Dominick Spracklen, an expert in carbon offset schemes from Harvard University.

WHAT ABOUT TREE PLANTING?

Again, theoretically yes. According to Spracklen, research has shown that one hectare of forest that is planted will remove about 100

HUMMINGBIRDS OR TIGERS? WHERE YOUR MONEY GOES

The money you pay to offset your carbon emissions can go to a huge range of different projects – here we profile three particular schemes, two of them where wildlife is the winner.

ECUADOR TREE PLANTING

The World Land Trust is carrying out reforestation for the purpose of creating carbon offsets in two of its reserves in Ecuador – Buenaventura in the south and Yanacocha in the north. Both harbour bird species that are classed as critically endangered by the IUCN – the el oro parakeet and the black-breasted puffleg, a type of hummingbird (pictured above). Both areas consist of degraded montane and subtropical forests that have been reduced to 10 per cent of their original cover in Ecuador.

INDIA AND SRI LANKA SOLAR LIGHTING

The CarbonNeutral Company is using carbon offset payments to install solar-powered lighting in rural homes in southern India and Sri Lanka. Many people in the project areas have no access to grid electricity and therefore use kerosene lamps. These produce carbon emissions, are responsible for causing respiratory infections and other illnesses in home owners and are a fire risk. It's estimated that the project will reduce carbon emissions by about 12,500 tonnes between 2004 and 2008.

INDIA BIOGAS DIGESTERS

The Co-op Bank (via Climate Care) is funding a project outside Ranthambore National Park in India that is tackling deforestation within the park and helping to preserve tiger habitat. Funds from offsetting the Co-op's mortgages – one tonne of carbon dioxide per house per year – buy biogas digesters, which produce methane from cattle dung to fuel cooking stoves. Carbon emissions are offset because it results in fewer trees being felled. Methane is also regarded as a renewable energy source.

tonnes of carbon (or 367 tonnes of carbon dioxide) from the atmosphere over about 50 years, though these figures will vary according to the tree species, the climate and other factors.

IS THIS SCIENCE ACCEPTED?

Not completely. The Gold Standard does not endorse tree planting, according to spokesperson Michael Schlup, because "the science behind the calculation is not that simple." There are other problems, too. How do you know that someone won't cut the trees down again or that they would not have been planted anyway? Some carbon offsets have been achieved by replanting previously deforested land with vast monocultures.

SO I SHOULDN'T PLANT TREES TO OFFSET MY EMISSIONS?

Well, it's not that simple. About 40 per cent of the increase in carbon dioxide levels since 1850 can be attributed to deforestation – it is, in other words, a major driver of climate change. Spracklen argues that buying carbon offsets could give considerable impetus to the conservation of tropical rainforests. Organisations such as the World Land Trust (see above) offset your emissions to benefit wildlife and biodiversity.

HOW DO I CHOOSE A GOOD OFFSET SCHEME?

Look at how the organisation is monitored and by whom. The Gold Standard would appear best at this stage because it is rigorous and independent of the schemes it assesses. Second, all these projects have broader benefits. If you want to achieve social gains, go for energy-efficiency schemes in developing countries. If biodiversity is more important, go for tree planting in a tropical country (see the World Land Trust and Envirotrade). Third, double most estimates given for carbon emissions from aviation if you want to achieve certainty (unless you use atmosfair).

WHERE DOES THAT LEAVE US?

Don't rely on carbon offsetting to salve a guilty conscience. You should aim to reduce energy consumption in all areas of your life. "It should not be a licence to pollute for guilt-free motoring or flying," says Greenpeace UK's climate campaigner Charlie Kronick. *Guardian* writer George Monbiot is a trenchant critic of carbon offset schemes, describing them as the equivalent of buying "complacency, political apathy and self-satisfaction." Others argue that the very act of calculating your emissions is the first step to reducing them, and that offset schemes could help to stimulate emissions reductions. One thing's for sure – both the issue of climate change and carbon offsetting are here to stay.

JARGON BUSTER

CARBON EMISSIONS

This is really a shortening of 'carbon dioxide emissions', the main greenhouse gas. Some organisations talk about tonnes of carbon, some about tonnes of carbon dioxide – the important thing is that 3.67 tonnes of carbon dioxide = 1 tonne of carbon.

CARBON CALCULATOR

All the offset organisations have devices of differing complexity on their websites that calculate how much carbon you emit either from a flight, your home or your car.

CARBON TRADING

This refers to people or companies buying and selling the right to emit carbon dioxide. This ties in with offsetting your carbon emissions, because in a sense you are buying the right to emit the amount you have offset. In the business, these are known as 'voluntary retail offsets'.

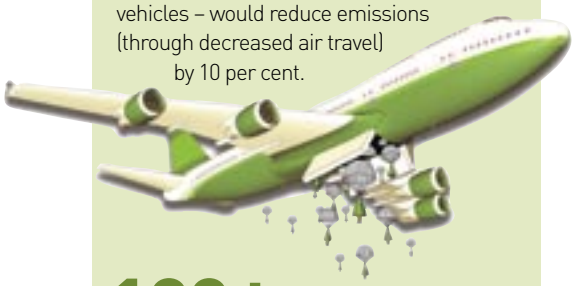
CARBON EMISSIONS: THE FACTS

There are some things we can say with certainty about carbon emissions:

300%

» AVIATION

Friends of the Earth has calculated that if aviation use grows as forecast, then carbon emissions from air travel will grow by 300 per cent between 1990 and 2030. By 2050, aviation could represent 15 per cent of global carbon dioxide emissions. It's estimated that a tax of €0.125 (about 8p) per litre – one fifth of the tax on petrol for road vehicles – would reduce emissions (through decreased air travel) by 10 per cent.



100 tonnes

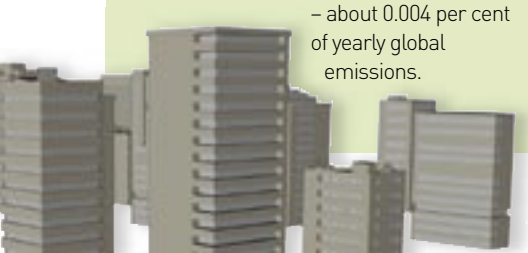
» FORESTRY

For every hectare of land that is reforested, 100 tonnes of carbon (or 367 tonnes of carbon dioxide) are removed from the atmosphere. The average Brit emits 3.6 tonnes of carbon dioxide a year – so to offset their emission, they need to reforest at least 0.01 hectares (or 100m^2).

20 bn tonnes

» GLOBAL EMISSIONS

Humans are responsible for producing 20 billion tonnes of carbon dioxide every year. The oil company BP alone is directly and indirectly responsble for the production of 1.5 billion tonnes of greenhouse gases (which include other gases besides carbon dioxide), about 5 per cent of the world total. There are no figures for the worldwide scale of the offset market, but the CarbonNeutral Company, one of the largest providers, estimates it has offset 750,000 tonnes of carbon dioxide since 1997 – about 0.004 per cent of yearly global emissions.



WORLD LAND TRUST

☎ 0845 054 4422; www.worldlandtrust.org

» **Status** Registered charity.
» **Offsetting activities** Tree planting.
» **What does it invest in and where?** Rainforest regeneration in developing countries such as Ecuador.
» **Scale of offsetting activities** Offset 8,000 tonnes of CO_2 in 2005 and expects to offset between 500,000 and 700,000 tonnes in 2006.
» **Is there any independent certification?** Yes – methodologies for monitoring the amount of carbon absorbed by trees were developed in conjunction with Leeds and Harvard Universities and projects run to guidelines set out by the Clean Development Mechanism. All reports are available to the public.
» **Summary** An organisation whose principal aim is not to offset carbon emissions, but to preserve and enhance biodiversity in areas of extreme importance such as tropical rainforests. **7/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 1.5 tonnes
COST £11.18

ENVIROTRADE

www.envirotrade.co.uk

» **Status** Registered UK company. Mozambique subsidiary has partial not-for-profit status.
» **Offsetting activities** Tree planting plus prevention of illegal logging and slash-and-burn farming.
» **What does it invest in and where?** Mostly poverty alleviation on the edge of Gorongosa National Park in Mozambique. 80 per cent of the money comes from EU grants, the rest from offsetting CO_2 emissions.
» **Scale of offsetting activities** Offset 40,000 tonnes of CO_2 over a three-year period. Most sales are not directly to the public.
» **Is there any independent certification?** Validation carried out by the School of Geophysicists at the University of Edinburgh.
» **Summary** Dual social and environmental benefits achieved through the Mozambique project, but it is largely funded by grants not offsetting emissions. **7/10**

CARBON CALCULATOR (Selecting 'long haul' option)
CO_2 EMISSIONS 3.75 tonnes
COST £26

CLIMATE CARE

☎ 01865 207 000; www.climatecare.org

» **Status** Not-for-profit company trust owned by a private company.
» **Offsetting activities** 80 per cent goes into renewable-energy and energy-saving projects and 20 per cent into rainforest restoration.
» **What does it invest in and where?** A wide range of projects, from energy-efficient stoves in Bangladesh and Madagascar to biogas digesters in India.
» **Scale of offsetting activities** About 150,000 tonnes of CO_2 in 2005-06, with 20-30 per cent of sales to individuals.
» **Is there any independent certification?** For each project, it engages an independent third party to assess emissions before the project was initiated and after. There is ongoing monitoring to see that targets are being met.
» **Summary** Well monitored with projects that not only offset CO_2 emissions but help to preserve wildlife habitats. **6.5/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 1.92 tonnes
COST £14.37

CLIMATE FRIENDLY

☎ 0061 2 9281 0358 (Australia);
www.climatefriendly.com

» **Status** Company.
» **Offsetting activities** Renewable energy only.
» **What does it invest in and where?** Challicum Hills windfarm in Australia and Te Apiti windfarm in New Zealand.
» **Scale of offsetting activities** The company declined to offer any figures.
» **Is there any independent certification?** Yes – its projects are certified by the Gold Standard and Green Power accreditation.
» **Summary** While Climate Friendly is rigorously monitored, unlike many other offsetting organisations, it generates no social or additional environmental gains from the projects it invests in, which are both windfarms. The website does offer a good explanation of where your money goes, and you can calculate emissions from domestic use and car travel. **7/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 4.06 tonnes
COST AU$85.82 (£35)

co2balance.com

CO2BALANCE

☎ 0845 094620; www.co2balance.com

- **Status** Currrently a limited company but is looking at other options.
- **Offsetting activities** Largely UK-forestry based, but has set up energy-efficiency schemes in two developing countries.
- **What does it invest in and where?** Reforestation of UK woodlands with only native broadleaved trees. Provision of energy-efficient appliances in Sierra Leone and Peru.
- **Scale of offsetting activities** Expects to offset 10,000 tonnes of CO_2 in 2006.
- **Is there any independent certification?** The School of Conservation Sciences at Bournemouth University validates its calculations and methods.
- **Summary** Many experts are sceptical about reforestation in the UK as a way of offsetting CO_2 emissions – as a developed country signed up to the Kyoto Protocol, the UK has emissions reductions targets anyway. **6.5/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 3 tonnes (for long-haul option)
COST £29

The CarbonNeutral Company

CARBONNEUTRAL CO

☎ 020 7833 6000; www.carbonneutral.com

- **Status** Company.
- **Offsetting activities** 80 per cent renewable-energy and energy-efficiency projects and 20 per cent forestry.
- **What does it invest in and where?** Projects range from a Gold Standard wind power scheme in New Zealand to energy-efficient lighting in the Caribbean and forestry projects in the UK, Mexico and Uganda.
- **Scale of offsetting activities** For 18 months up to June 2006, it committed to offsetting 378,423 tonnes of CO_2 through corporate clients and 14,869 through individuals.
- **Is there any independent certification?** All projects verified on an ongoing basis by The Edinburgh Centre for Carbon Management.
- **Summary** Forestry projects are mainly in the UK, raising questions about whether carbon emissions have been truly offset. Otherwise, well monitored. **6/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 1.5 tonnes
COST £11.10 (UK forestry) up to £13.98 (wind power)

BBC Wildlife ON TEST WINNER

Investing in solar-powered water heating in India will not only help local people but offset your carbon emissions, too.

atmosfair

ATMOSFAIR

www.atmosfair.de; 0049 30 288835682

- **Status** Not-for-profit, registered charity according to German law.
- **Offsetting activities** Those that adhere to the Gold Standard – ie, atmosfair offsets into energy-saving projects only.
- **What does it invest in and where?** Solar water heating in India, water cleaning in a palm oil plant in Thailand, self-driven water pumps in Sri Lanka.
- **Scale of offsetting activities** 10,000 tonnes of CO_2 in 2005.
- **Is there any independent certification?** Yes – this is necessary to achieve Gold Standard status. Actual certification carried out by TÜV SÜD Group (www.tuev-sued.de).
- **Summary** Appears to be the most rigorously monitored offsetting organisation and has the most sophisticated approach to assessing CO_2 emissions from flights. The easy-to-use website has useful information on how the offsets are calculated and includes a list of tour operators that only offer holidays without flights. But loses points because you can't work out your car travel or home emissions. **8/10**

CARBON CALCULATOR (London-Nairobi return)
CO_2 EMISSIONS 4.68 tonnes
COST €94 (£63)

CHOOSING THE WINNER...

IT MAY SEEM COUNTER-INTUITIVE that *BBC Wildlife*'s recommendation for the best carbon offset organisation is the one that will cost you the most, but there is a good reason for this. It is the only one where all the projects adhere to the only internationally accepted standard on carbon offsets, plus it has the most rigorous approach to calculating carbion dioxide emissions from flights. What's an extra £60 on top of a holiday to Kenya, anyway?

Other organisations, however, are likely to do more directly for wildlife, and the World Land Trust gets top marks in this department for its reforestation work in the Ecuadorian Andes. Rare birds and other species will benefit from investment in its projects.

Of the others, Climate Care's biogas digester project is helping to preserve tiger habitat in India, and Envirotrade is improving the buffer zones of Gorongosa National Park in Mozambique. If you really want to feel that you have made a difference, the best advice is to avoid investing your carbon cash in UK-based forestry projects.