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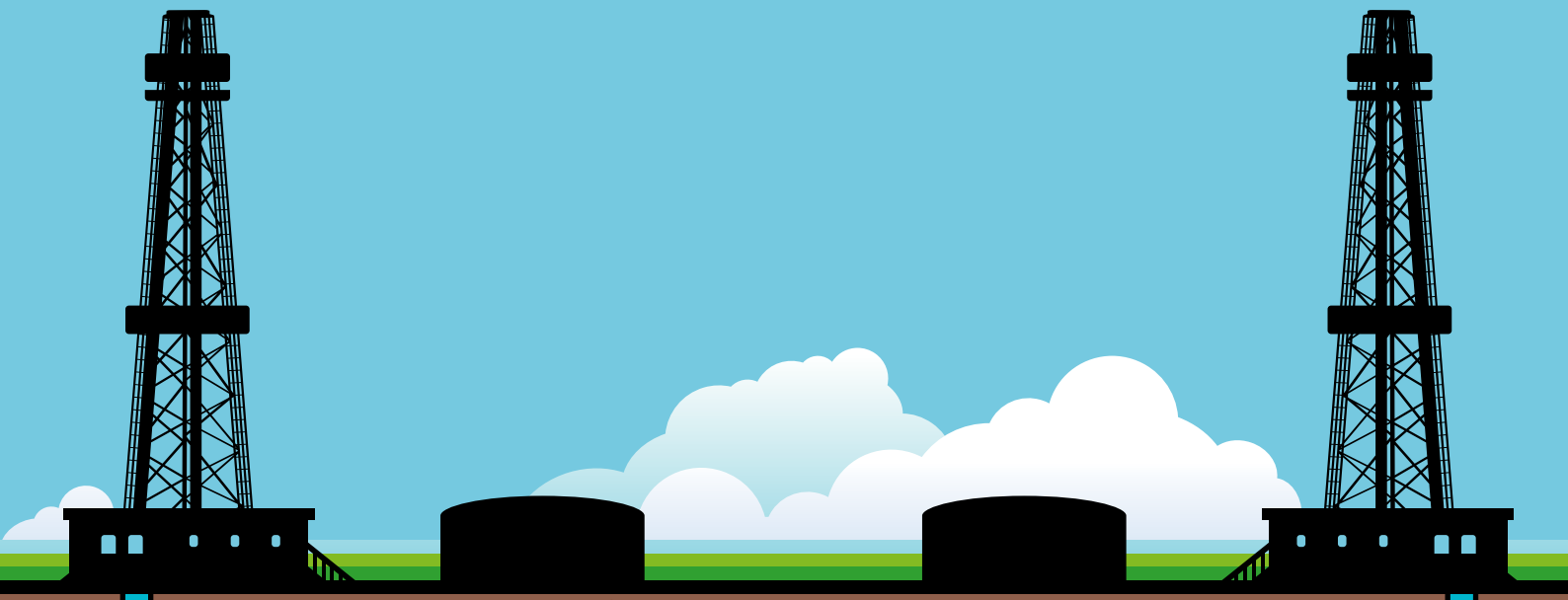

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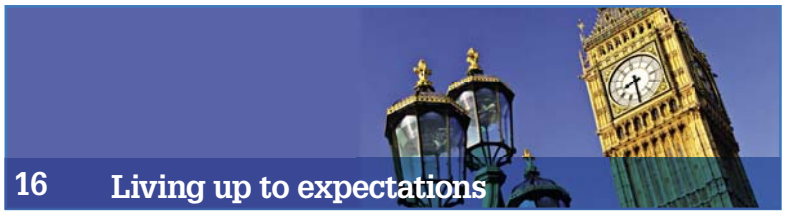

Energy & Utility Skills Network Fuelling Growth for Small Businesses

energy&utilityskills
Networks

£1.26m to support Employer Networks

Figures from the Federation of Small Businesses has shown that over 42,000 people working for small businesses in the waste management and recycling industry are still waiting to receive formal training. But we must not judge our 6,000 private-sector waste management and recycling businesses; they're out there every day doing what they do best. Time, money and a lack of funding available from the government have all contributed to this skills gap. Energy and Utility Skills (EU Skills), the Sector Skills Council for the energy and utilities industries, has stepped in to help by providing a £1.26m network opportunity for smaller business.

Furthermore, the Environmental Services Association (ESA) Educational Trust in partnership with Talent Bank, a product of EU Skills, has agreed to fund a minimum of five bursaries for work-based Apprenticeships aimed at small to medium sized businesses in the waste management industry.

EU Skills is licensed by government to ensure that individuals and businesses in the gas, power, waste management and water industries have the skills they need now and in the future. With this in mind, EU Skills has secured funding from the UK Commission for Employment and Skills (UKCES) through the Growth and Innovation Fund totalling £1.26m. This new injection of funding will be used to support the setting up a series of employer-led network groups facilitated by EU Skills and supported by small businesses in the gas and waste management industries.

The EU Skills Network will offer smaller businesses in the waste management industries a lifeline helping to identify training and skills gaps in their workforce and how best to overcome them. The Network will encourage smaller businesses to voice their concerns and provide a spring-board to launch their ideas from.

The EU Skills Network website is the starting point to register interest, recommend a business group to join and pose a suggestion to the employer-led network. Signing up to the web-based network provides access to:

- Network training and events
- Big industry tips, advice and support
- Access to quality training
- Opportunities to get involved with tender responses
- Access to funding for Apprenticeship programmes.

The bursary programme in association with Talent Bank is available to smaller businesses in the waste industry who are looking to take on an apprentice for two years. The cost of training will be fully funded by the ESA. Talent Bank will handle the recruitment process on behalf of the five successful businesses and will monitor and support the apprentice throughout their training, ensuring that only the highest level of skills are attained.

Apprenticeships are a proven way to train a workforce. They can make organisations of all sizes more effective, productive and competitive by addressing skills gaps directly – which is even more important in uncertain economic times.

If you are an employer who has identified a recruitment need and you're looking to grow your business by recruiting an apprentice, EU Skills needs to hear from you.

networks.euskills.co.uk

The Sector Skills Council for gas, power, waste management and water.

For more information:

EU Skills Network
http://networks.euskills.co.uk/skillsandtraining

Talent Bank and ESA bursary scheme
www.euskills.co.uk/about-us/talent-bank/esa-bursaries

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IEMA works alongside government, the media and industry to enhance the recognition of the profession and promote the importance of practitioners in combating climate change, working towards a low-carbon economy and building a sustainable future.

IEMA
Saracen House
Crusader Road
City Office Park
Tritton Road
Lincoln LN6 7AS
tel: +44 (0) 1522 540069
fax: +44 (0) 1522 540090
info@iema.net
www.iema.net

Editor
Paul Suff
paul.suff@lexisnexis.co.uk

Deputy editor
Sarah-Jayne Russell
sarah.russell@lexisnexis.co.uk

Managing editor
Louis Wustemann
louis.wustemann@lexisnexis.co.uk

Sub-editors
Mike McNabb, Brenda Morris
Angela Partington

Advertising sales executive
Jodie Fletcher
tel: +44 (0) 20 8212 1989
jodie.fletcher@lexisnexis.co.uk

Recruitment advertising
Elaheh Umeh
tel: +44 (0) 20 8212 1984
elaheh.umeh@lexisnexis.co.uk

Marketing campaign manager
Victoria Newman
victoria.newman@lexisnexis.co.uk

Design
Jack Witherden
jack.witherden@lexisnexis.co.uk

Advertisement production
John Woffenden
john.woffenden@lexisnexis.co.uk

Director of content
Simon Collin
simon.collin@lexisnexis.co.uk

IEMA communications coordinator
Katrina Pierce
k.pierce@iema.net

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400 little reminders

Global carbon dioxide levels are edging closer to the dangerously high level of 400 parts per million (ppm). At the end of April, the daily CO_2 level measured by the Mauna Loa Observatory in Hawaii was 399.72ppm. At the advent of the industrial revolution in the 18th century, the level was around 280ppm. And, when Charles Keeling, founder of the Hawaiian monitoring station, started measuring atmospheric greenhouse gas in 1958, the level was 316ppm.

To put the 400ppm figure further into perspective: the last time it was recorded was around 2.5–5 million years ago, during the Pliocene epoch, a period when average temperatures around the world were 3–4°C higher than now (10°C at the poles) and sea levels were up to 40 metres higher than current levels. That doesn't necessarily mean we're on course for a similar scenario. For one thing, the speed at which CO_2 levels have risen over the past century is unprecedented, so we are entering the unknown. But it does suggest that our ability to restrict the rise in global temperature to 2°C above pre-industrial times – a level scientists say would avoid dangerous climate change and one most governments endorsed at the Cancún climate conference in 2010 – is looking increasingly remote.

The Bonn round of climate negotiations has just closed without any breakthrough towards a new international agreement due in 2015. Christiana Figueres, executive secretary of the United Nations Framework Convention on Climate Change, said no nation was doing enough to combat global warming. Figueres reminded governments during the meeting that, while they are on track to meet the milestones they have set themselves, they are not yet on track to meet the demands of science. Indeed, we carry on burning fossil fuels as though there are no repercussions for the planet.

Governments across the world persist in heavily subsidising the oil and gas industry, encouraging fossil fuel producers to scour the ends of the Earth to locate new sources to exploit

There is a continuing belief among many that recoverable fossil fuels should go up in smoke. A report from Carbon Tracker and the Grantham Institute on Climate Change and the Environment at the LSE (p.4) illustrates the short-sightedness of such an approach and its incompatibility with global climate change goals. Nonetheless, governments persist in heavily subsidising the oil and gas industries, encouraging producers to scour the ends of the Earth to locate new sources. The IMF recently revealed that $480 billion is spent annually on direct fossil fuel subsidies, mostly in developing countries, while an additional $1.4 trillion is spent on indirect subsidies.

As the IMF points out, energy subsidies distort resource allocation by encouraging excessive energy consumption, artificially promoting capital-intensive industries, reducing incentives for investment in renewable energy, and accelerating the depletion of natural resources. The Washington-based body also notes that subsidies mostly benefit higher-income households, increasing inequality. The rejection of plans to underpin the plummeting price of allowances in the EU emissions trading scheme (p.5) is another illustration of a reluctance among policymakers to make the kind of shift needed to wean us off our addiction to fossil fuels.

Passing the 400ppm threshold is an important reminder that our chances of achieving the 2°C target are fast melting away. It's also worth recalling that the World Bank said last year that the current trajectory of emissions indicated a level of warming by the end of century that is more like 4°C than 2°C. Such a rise in temperature would trigger cataclysmic changes, including extreme heatwaves and a sea-level rise – back to the Pliocene epoch, then.

Paul Suff, editor

Short cuts

New IEMA chief

Tim Balcon, the former head of the Energy and Utility Skills Council (EU Skills), has taken up his post as IEMA's new chief executive (see p.35). Balcon joined the Institute on 22 April following the departure of Jan Chmiel in March. He has more than a decade of experience in leading and developing organisations focused on professional skills. Under his tenure EU Skills was named "outstanding sector skills council" of 2009 and secured £3.6 million of finance from the Employer Investment Fund. Balcon also previously headed GWINTO, the Gas and Water Industries Training Organisation, and was president of the Institute of Water. Balcon said he was delighted to be joining the Institute. "IEMA has a fantastic purpose and a very impressive membership base," he said. "I am very much looking forward to ensuring that the professional skills of our members are recognised as being a fundamental part of a growing and conscious economy."

Tackling deforestation

The UK has pledged to back an international industry initiative aimed at eliminating deforestation associated with the production of palm oil, soya, beef and paper by 2020. Energy and climate change minister Greg Barker confirmed during a visit to Washington that the UK had joined the Tropical Forests Alliance 2020, a public-private partnership set up at the Rio+20 summit between the US government and the Consumer Goods Forum. "With up to 17% of global greenhouse-gas emissions coming from deforestation, tackling this issue is a central part of how to address climate change, support greener growth and sustainable development," said Barker. "The UK wants to accelerate international efforts to reduce deforestation. That's why we are keen to work with the alliance and help drive this important agenda forward." The Norwegian and the Dutch governments have also joined the alliance.

Less than 40% of global giants fully report GHGs

Analysis of greenhouse-gas (GHG) reporting by the 800 biggest companies around the world reveals that just 37% are publishing full data on their scope 1 and 2 emissions in line with the GHG Protocol's reporting principles. It also finds that just one-fifth have their emissions independently verified.

The research, by the Environmental Investment Organisation (EIO), a research body promoting carbon transparency, assessed companies, including Vodafone, Pepsico and General Motors, on their carbon output and how comprehensively they report GHG emissions. EIO concludes that even the world's leading firms are adopting "highly inconsistent" approaches to reporting.

Of the European firms examined, more than half publish complete scope 1 and 2 data, and 35% have the figures verified. This compares with only 13% of companies from North America that report full, verified emissions, and just 11% of BRIC-based organisations.

Meanwhile, nearly two-thirds (63%) of the 800 companies assessed provide either incomplete data or no data at all.

The research also confirms that few firms provide comprehensive scope 3 data. Chemical company BASF was the only one assessed to report all its scope 3 emissions.

"Since the majority of total corporate emissions often come from scope 3 sources, large quantities of emissions are not being accounted for," said Sam Gill, chief executive at EIO.

The EIO rankings were published as the GHG Protocol launched free guidance to help firms estimate their scope 3 emissions (lexisurl.com/iema15356).

The guide expands on information in the GHG Protocol's scope 3 standard, published in 2011, and includes methods for calculating emissions for each of its 15 categories of scope 3 emissions; advice on how to select the most appropriate method; and more information on assessing emissions related to investments, recycling and energy from waste.

Investors in fossil fuel firms given stern carbon warning

The majority of fossil fuel reserves cannot be burned if we are to limit global temperature rises to 2°C, warns a new report from Carbon Tracker and the Grantham Research Institute on Climate Change and the Environment.

According to the analysis, only a fraction of the 2,860Gt of carbon embedded in fossil fuel reserves already identified can be burned if we are to avoid a rise in global temperatures of more than 2°C above pre-industrial levels by 2050. Just 900GtCO2 can be burned for an 80% probability to stay below 2°C, states the report,It adds that investors need to understand that as much as 80% of the coal, oil and gas reserves of listed companies is unburnable.

It describes the $674 billion invested in 2012 by the top 200 oil and gas and mining companies to find and develop more reserves and new ways of extracting them, as wasted capital, with the reserves likely to become "stranded assets", replaced by low-carbon alternatives.

"Smart investors can already see that most fossil fuel reserves are essentially unburnable because of the need to reduce emissions in line with the global agreement by governments to avoid global warming of more than 2°C," commented Nicholas Stern, chair of the Grantham Research Institute and author of the influential 2006 report on the economics of climate change.

"Investors can see that investing in companies that rely solely or heavily on constantly replenishing reserves of fossil fuels is becoming a very risky decision."

The report warns that the share values of the top fossil fuel companies, which currently have a collective market value of $4 trillion, could fall by up to 60% in a low-emissions scenario.

Stern points out that the continuing financial crisis shows what can happen when risks accumulate unnoticed, and advises companies and regulators to work together to quantify the risks associated with high-carbon assets.

MEPs put ETS on critical list

Low price risks low-carbon investment

The future of the EU emissions trading scheme (ETS) has been thrown into doubt after MEPs voted to reject plans by the European Commission to boost the price of allowances, which are now hovering around €3.

The commission had wanted to delay the auctioning of 900 million allowances for five years to counteract the huge surplus of permits currently in the market, which has seen their price collapse. It believes that the process, known as "backloading", would help the price of permits recover to €12 by 2015.

Despite support from several member states, including the UK, Denmark and France, MEPs in Strasbourg voted 334 to 315 against the measure.

The refusal by MEPs to support the plans for backloading leaves the ETS in chaos and will result in continued rock-bottom prices for carbon, according to market analysts Point Carbon.

Climate change commissioner Connie Hedegaard described the decision as a bad day for European emissions trading. Similarly, Richard Gledhill, a partner at PwC specialising in climate policy, carbon trading and markets, said the vote was another body blow for carbon markets in Europe. "This hardly chimes with all the [EU] talk of 'increasing ambition' in the UN climate negotiations. Urgent reform is now needed to restore confidence in the markets and in the political process, ahead of the 2015 target for a global deal on climate change," said Gledhill.

Chris Davies, Liberal Democrat MEP and columnist for *the environmentalist*, claimed that short-term financial concerns had overridden the desire to support low-carbon technologies. "MEPs have turned their back on the future," he told the European parliament, condemning UK Conservative MEPs who had largely voted against the backloading proposals. "By refusing to endorse the commission's proposals I fear that MEPs have betrayed Europe's long-term economic interests," he said.

The short-term future of the ETS will now depend largely on the outcome of the European council meeting on 27 June. "We still have to hear from the council before we get to the end game for the [backloading] proposal," commented Hedegaard, noting that the Irish presidency of the EU had signalled that it would prioritise the issue.

EU climate change commissioner Hedegaard condemns the decision

The council has yet to adopt a position on backloading, but Davies told *the environmentalist* he believed it would fail to reach an agreement at the June meeting. A decision will "probably have to wait until after the German election in September," he said, because senior members of the German coalition government are split over whether to intervene in the European carbon market.

In rejecting the proposal to delay auctions, MEPs sent it back to the EU parliament's environment committee to look again at reform, possibly amending the plans before allowing MEPs a further vote. "It is likely that the issue will come back to parliament, with amendments from the committee to be tabled this month, and then a vote early in July," said Davies. "So the fight will be on to reverse some of the votes of last time and take a lead."

Meanwhile, a new report from the House of Lords committee on Europe, looking at investment in energy infrastructure across the EU, warns that, if the price of carbon under the ETS languishes for long, its credibility as a deterrent to new coal investment will be lost. It also claims the uncertainty in ETS revenues makes it impossible for member states to budget effectively, and that the plummeting price of allowances has reduced a major source of expected EU finance for the development of low-carbon technologies such as carbon capture and storage (CCS). The NER-300 facility to support CCS demonstration projects has declined massively in value as the ETS price has collapsed, says the committee.

Short cuts

Buncefield remediation

The company leading the remediation of the Buncefield oil storage depot in Hertfordshire has announced that the site is now ready for redevelopment. In December 2005, much of the site was destroyed by a massive explosion and fire, which injured more than 40 people and contaminated the area with fuel oil and fire-fighting foam additives. Remediation of the site has involved major excavation and segregation and disposal of contaminated soils. Celtic Technologies reports that this work is now complete, after it removed a significant volume of soil from site. In 2009, the High Court ruled that Total UK was liable for the damage caused by the explosion and fire. Three other companies – Hertfordshire Oil Storage, a joint venture between Total and Chevron, Motherwell Control Systems and TAV Engineering – were found guilty in 2010 for their part in the incident.

MPs back shale gas

MPs on the energy and climate change committee believe shale gas production in the UK (see pp.21–23) could enhance energy security and boost tax revenues. However, in a new report, the committee warns that a shale gas revolution in the UK similar to that in the US, where hydraulic fracturing of shale rock to extract gas has sent gas prices plummeting, is unlikely. The US industry has benefited from federal subsidies, a favourable regulatory regime, low population density and mineral rights for landowners, says the report, adding that the scenario for shale gas drilling in the UK is very different. The MPs also warn that, if a substantial shale gas industry emerges it could put at risk the UK's statutory climate change targets. Meanwhile, Cuadrilla, the only shale gas company operating in the UK, has been criticised by the advertising watchdog for claiming that it uses "proven, safe technologies". The Advertising Standards Authority adjudicated on 18 claims made in a Cuadrilla leaflet, and demanded qualifications to seven of them.

In Parliament

Smart decision or expensive error?

The government has now completed most of the specifications and detailed design for smart meters, which will be installed in homes from 2014. So is it all systems go? I'm not sure it is. Smart meters will provide useful real time data for energy supply and balancing, but will they also be useful for consumers in terms of planning their own energy use? There is no sign yet of an information campaign similar to that which accompanied the recent switch from analogue to digital TV. It will certainly be needed as the rollout gets under way if householders are to use the meters effectively to manage their energy consumption.

There are also areas of the specifications for smart meters that ought to give pause for further thought. The home area networks (HANs) specified into each smart meter are the equivalent of home hubs in the meter, and will connect to a range of household computer-driven hardware, as well as the home's energy function. Not only that, they will, as specified, possibly limit what can be done with the energy function of the meter in the future.

In the US, where the technology has been included in meters installed in California and elsewhere, HANs have not been universally activated by energy companies, suggesting that there may be a problem. There is also evidence, from the US that people simply do not use the home display units as envisaged, so energy savings are negligible. It might be better instead to invest in technologies that demonstrably do produce savings, such as putting thermostats in the seven million homes in the UK that do not have them.

If modifications are not made we might, by 2019 when the rollout of smart meters is expected to be complete, have installed at some expense, an over-engineered system that we will only be able to partly use.

Alan Whitehead, Labour MP for Southampton Test and energy and climate change committee member

Unilever living up to its 2020 commitments

Consumer goods giant Unilever is reporting good progress towards meeting the goals of its 2020 sustainable living plan. Its production processes were generating less CO_2 and waste, and consuming less water in 2012 than in previous years, the firm has confirmed.

In 2010, the company behind household brands Dove, Comfort, Flora and PG Tips, made a commitment to halve the greenhouse-gas impact of its products across their life cycle over 10 years. It also pledged a similar reduction by 2020 in both the water associated with consumers' use of its products and the waste associated with the disposal of its goods.

The latest figures reveal that in 2012 the amount of CO_2 from energy consumed by Unilever factories was 838,000 tonnes less than in 2008, the baseline year for its carbon, waste and water targets. The firm says this equates to a 31.5% reduction per tonne of production. Data for last year also show that the Anglo-Dutch company's facilities abstracted 13 million cubic metres less water than in 2008, a 25% reduction per tonne of production.

Unilever sites generated 6,000 tonnes less waste in 2012 than in the baseline year, which represents a 51% reduction per tonne of production. This equates to a cost saving of almost €10 million since 2008, says the firm. It also reports that more than half of its 252 manufacturing sites around the world now send no non-hazardous waste to landfill.

UK is breaking air quality rules, says Supreme Court

The government is failing in its legal duty to protect people from the harmful effects of air pollution, the Supreme Court has ruled, paving the way for the European Commission to take legal action against the UK.

The case, brought by the lawyer activist group Client Earth, focused on 16 cities and regions in the UK, from London to Glasgow, which the government admits will suffer higher levels of nitrogen dioxide (NO_2) than allowed under the EU Directive on air quality (2008/50/EC), in many cases until at least 2020. The court confirmed that, because the government is in breach of the Directive, "the way is open to immediate enforcement action at national or European level". However, the five judges referred a number of legal questions to the Court of Justice of the European Union, which will delay any enforcement action against the UK.

James Thornton, CEO at Client Earth, described the ruling as a "turning point in the fight for clean air" and would put pressure on environment secretary Owen Paterson to come up with a plan to improve air quality in affected areas.

The Supreme Court decision overturns previous rulings by lower courts.

The Directive came into force in January 2010 but allowed member states to postpone meeting some requirements until 2015. Lawyers acting for the environment department acknowledged at a High Court hearing in December 2011 that the UK would be unable to meet the limits set for NO_2 by the extended 2015 deadline in up to 16 areas, in effect breaching the safer limits imposed by the Directive for a 10 years.

In October 2010, a report from the environmental audit committee blamed inaction by successive governments for poor air quality in the UK. Defra's response to the committee, which was published in February 2012, argued that the potential benefits of meeting the 2015 target date for safer levels of NO_2 were outweighed by the expense.

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Kayley, RRC Customer Services Manager

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Metrics needed to value nature

Organisations and policymakers need a clear way of measuring the value of ecosystems services to be able to incorporate the environment into strategic decision making, according to the natural capital committee (NCC).

In its first annual report, the independent advisory body argues that, without an economic value, the natural environment has "often been assumed to be of zero value", resulting in unsustainable consumption of resources and considerable damage to ecosystems.

However, the NCC concludes that the decline in England's natural capital over the past 50 years could be reversed if a clear way of valuing assets is developed, and if the value of those assets is monitored and incorporated into growth strategies.

"Our economic prosperity and the wise use of our natural resources are not mutually exclusive," warned Dieter Helm, chair of the NCC. "In fact, the latter is a precondition of the former. Economic growth must be sustainable – otherwise it will not be sustained."

The committee calls on the government to develop broader economic indicators that consider the depreciation of the natural environment. "Natural capital is enormously important to the economy and yet it is largely omitted from national economic indicators as well as from most corporate and government policy decisions," states the report. "The consequence is that natural resources are not being allocated efficiently within the economy and opportunities for gains in wellbeing and growth are being lost."

The NCC also advises companies to develop "natural capital accounts" to sit alongside their financial accounts.

Such an approach would help to ensure that the environment is being considered in the decision-making process of organisations, and will help to mitigate

risks to economic growth and supply chains, it states.

The NCC, which was created in 2011 following publication of the natural environment white paper, now aims to develop a set of metrics to value ecosystems and a risk register of natural capital assets.

Meanwhile, Defra's marine evidence group has warned that there remains "large uncertainties" in the available data on the impacts of marine developments on special areas of conservation.

EIA Update

iema

Revising the EIA Directive

IEMA launched its position on proposed revisions to the Environmental Impact Assessment (EIA) Directive in April (lexisurl.com/iema15306), after a series of 2013 member events. IEMA's position recognises the need for mandatory scoping. However, it calls for changes to article 5 (on scoping) to create a developer-led process based on pre-application consultation. By contrast, the European Commission is proposing that planning authorities lead on determining scoping decisions. IEMA has been promoting its position to the government and has met officials from the communities and local government department, which is leading the negotiation on the revision for the UK at the European council. IEMA has also put its views to members of the European parliament, the EU committee of the regions and the UK's devolved administrations, as well as other interested parties. The Institute ran a series of EIA update workshops around the country in early May to inform members about the position and will continue to track developments in the EU parliament and council.

IEMA workshops

The IEMA workshops on updating the EIA Directive also provided details on the recently published third edition of the *Guidelines for landscape and visual impact assessment* (GLVIA3) and provided nearly a dozen EIA Quality Mark case studies. The presentations from the workshops can be found at iema.net/event-reports.

EIA in the UK

England – despite a 20 March deadline set by the Treasury, the communities and local government department has failed to launch its planned consultation on the EIA regulatory guidance which will replace DETR Circular 02/99. IEMA understands this consultation will not launch until the summer.

Scotland – new Scottish government guidance on EIA practice, to replace PAN58, was developed in 2012. However, the document has not been published and there is, as yet, no clear date for launch.

Wales – IEMA understands that the long-awaited consultation on the Welsh government's plans to replace the Town and Country Planning EIA (England & Wales) Regulations 1999 with an updated and consolidated set of Welsh regulations will be issued in June.

New European guidance

In early April, the European Commission launched two documents, entitled: *Guidance on integrating climate change and biodiversity into EIA* and *Guidance on integrating climate change and biodiversity into SEA*. The first references IEMA's principles on considering climate change adaptation in EIA (iema.net/eia-cc). IEMA will devote the EIA Quality Mark lunchtime webinar on 30 May to presentations focused on disseminating the key messages from both guidance documents. The European Commission has also updated its *EIA of projects: rulings of the Court of Justice*, which includes key EIA case law up to March 2013. The document is a useful reference for practitioners and sets out over-arching principles of EIA case law. It also provides details on rulings related to the EIA Directive and its annexes. All three documents can be downloaded from ec.europa.eu/environment/eia.

Imported goods push UK's carbon footprint up 10%

The UK's carbon footprint has grown by at least 10% over the past 20 years, as rising levels of imports have seen embodied CO_2 emissions far outstrip domestic savings, according to the committee on climate change (CCC).

In its latest report, the committee reveals that, although greenhouse-gas emissions produced in the UK have fallen by 19% since 1993, those generated overseas from making goods and services consumed here have increased by 40%.

With the UK ranked as one of the largest net importers of carbon in the world, the CCC concludes that international action to curb global emissions is "essential" if the government is to successfully meet its overall carbon ambitions. "Clearly we need to reduce imported emissions," said David Kennedy, chief executive at the CCC. "This [report] highlights the fundamental need to reduce global emissions in order to achieve climate objectives, and to do this through a new global deal."

The CCS suggests imposing taxes linked to products' embodied carbon and setting legally-binding standards for the carbon-intensity of goods could help to drive down global emissions.

Dr Alan Knight, sustainability director at Business in the Community (BITC), said the report illustrates the need to revolutionise business models. "Businesses need to move away from incremental changes – such as cutting their carbon footprint by 4% – to asking if they have done enough in their business model to make it possible that by 2050 nine billion people on the planet will be enjoying high-quality lives," he said.

According to Knight, businesses will need to increasingly focus on consumption trends. "A thriving one-planet economy needs new products and services, but also consumers' lifestyles will need to change," he said. "One of the conversations that businesses should be having with their customers is to help ensure their products are truly sustainable. A firm can sell certified sustainable fish, but if consumers buy three fish and throw two away, that's still an unsustainable habit."

During May, BITC is running its fourth annual "Be the Start" initiative, during which it will work with Marks & Spencer, IBM and others to promote more sustainable lifestyles. More details are available at bethestart.org.

From environmentalistonline.com this month…

Bee ban blast

The UK's refusal to back an EU ban on insecticides linked to declining bee numbers has been slammed by the parliamentary environmental audit committee (EAC). In a report examining Defra's approach to protecting pollinating insects, the EAC concludes that the department has allowed economic considerations to influence its decision not to support a European ban of three neonicotinoid pesticides on crops attractive to bees. The committee warns that Defra's interpretation of the precautionary principle has caused economic factors – such as the impact of a ban on the agriculture sector – to become "entangled with environmental decision making". After the report was published, the European Commission confirmed that a two-year moratorium on the pesticides would come into effect from 1 December 2013, despite the UK and 11 other member states resisting the ban.
environmentalistonline.com/EACbees

Royal winners

Wessex Water Services has scooped its second Queen's Award for Enterprise in recognition of is sustainability efforts. Of the 152 awards presented this year, nine were awarded for sustainable development – one more than in 2012. Winners in the sustainability category are those with products, services or management approaches that have achieved "major benefits" for the environment, society and the economy over several years. Wessex Water Services was recognised for "embedding sustainability throughout its management and operations". Other winners include Falmouth-based clothing line Seasalt, which was described by the judges as a "model for ethical standards"; and Vegware, a company that makes compostable cutlery and tableware for the hospitality sector, which was lauded for cutting landfill waste and promoting sustainability to its clients.
environmentalistonline.com/qawards

Legal costs

The Court of Justice of the European Union (CJEU) has ruled that the UK must ensure the costs of mounting a legal challenge on environmental grounds are not "unreasonable". Under the Aarhus Convention and EU legislation, environment-related legal proceedings, such as judicial reviews of planning decisions, must not be "prohibitively expensive". However, NGOs have repeatedly criticised the high cost of pursuing such a challenge in the UK. The CJEU was asked to rule on the meaning of "prohibitive expense" in a case involving a Rugby resident who is facing a £90,000 bill after failing to overturn a decision to allow a local cement works to be built. The CJEU ruled that the UK courts must ensure that individuals are "not prevented from pursuing a claim" because of the potential financial burden and that the courts must take into account the public interest in protecting the environment.
environmentalistonline.com/legalcosts

Recent Prosecutions

'Sickening' smells cost poultry firm £52,500

Food supplier Moy Park has been fined £10,000 and ordered to pay costs of £42,500 after being found guilty of breaching its environmental permit and allowing nauseous odours to be released from one of its poultry farms.

In a nine-day trial, Lincoln magistrates' court was told that, over a three-year period, the Environment Agency had received close to 100 complaints about smells from the Heal Poultry Unit in Kirkby-on-Bain, near Woodhall Spa. Local residents said that odours from the intensive poultry farm left them feeling sick and depressed, and had forced many to stay indoors.

Moy Park held an environment permit allowing it to rear up to 156,200 chickens at the farm on a 37-day cycle, on the condition that it protected the environment and local communities. However, between July 2008 and September 2011, 94 complaints were lodged with the regulator about odours from the site. The agency visited the site and sent "numerous" communications to Moy Park about the need to better manage smells, but the problem continued. In February 2010, after the firm refused to have staff interviewed voluntarily, the agency used its statutory powers to interview two employees. They admitted that odours were monitored only occasionally and that no records were kept.

The agency continued to receive complaints over the next 11 months and Lincoln magistrates convicted Moy Park of breaching its environmental permit twice between 21 July 2009 and 18 January 2011, fining the firm £5,000 for each offence.

Since February 2011, the firm has cut the number of chickens reared at the site by one-third, which has reduced odours. However, district judge John Stobart said the firm could have made changes earlier, but instead tried to mask the smell and maximise its profit. Environment Agency officer Emma Benfield said: "If Moy Park had resolve problems earlier it would not have been necessary to take enforcement action. The intensive farming sector needs to recognise that its activities have potential to cause amenity impact to neighbours and act sooner to rectify problems."

Moy Park, whose consumer brands include Castle Lea and Jamie Oliver's ready-to-cook chicken, was convicted of failing to control odours from its farm in Sibsey in March 2011 and fined £30,000. In August 2012, it was fined £12,000 for breaching its water abstraction licence at another of its Lincolnshire sites.

£15,000 fine for toxic chemical spill

Utilities company South West Water has been fined £15,000 and ordered to pay £50,000 in costs after a corrosive chemical from one of its sewage works leaked into the East Looe River in Cornwall.

In August 2010, the company informed the Environment Agency that a damaged pipe at its Lodge Hill works had spilled aluminium chloride, which is toxic to fish. Later the firm discovered that, owing to two perforated cable conduits, it was possible for any of the chemical spilled outside its bunded tank to drain into a buried manhole and reach the river.

The agency's Rob Hocking said that the hazardous nature of aluminium chloride placed a "special responsibility" on companies to ensure it is handled and stored with great care. "Every effort should be made to minimise the risk of it escaping into the environment," he said.

More fines over Perth hydro scheme

Two company directors have been fined £10,000 in total for breaching environmental licences and polluting a local watercourse when carrying out construction works for the Inverinian Hydro Scheme in Perthshire.

Despite repeated warnings from the Scottish Environment Protection Agency, the contractors failed to take action to prevent pollution from their works and illegally built a pipeline, ford and access track. The resulting silt significantly affected the rivers and the habitat of protected freshwater pearl mussels.

Allan Smith, director of A&C Construction, and Charles Kippen, director of Chic Kippen and Son, both pleaded guilty to breaching the Water Environment (Controlled Activities) Regulations 2011. Shawater, the firm employing the contractors, was fined £4,000 in February.

Case Law

Council liable in nuisance for gas escaping from mine

In *Willis and another v Derwentside District Council* [2013] All ER (D) 70, the council was liable in nuisance for gas escaping from a disused colliery. Dangerous emissions were discovered 28 years after the land housing the mine was transferred to the council from the National Coal Board. Despite remedial work to abate the emissions, the council remained liable because it had not issued a certificate of completion for the work.

The main issue was whether the council was liable in nuisance and, if so, the extent of its liability. Private nuisance is an unlawful interference with the use or enjoyment of land or some right over or connection with it. Where the defendant has not caused the nuisance, but merely permitted it to continue, proof of negligence is required. Liability arises only where the defendant fails to take reasonable steps to abate the nuisance once it knew or ought to have known about it.

In this case, the council was under a duty to abate the gas escaping from the date the emissions were discovered. The duty applied to emissions of gas originating from the council's land as well as gas merely passing through the land.

The claimants successfully argued that the council's failure to issue a certificate of satisfactory completion of the remedial work meant a mortgage could not be raised on the property, making it unmarketable. Pending the provision of a certificate and an undertaking to monitor and maintain the works, the council had not taken all reasonable steps to abate the nuisance. The claimants were also entitled to claim the costs of employing their own expert, which they did after the council refused to disclose its reports.

Hayley Tam and George Hobson

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New Regulations

In force	Subject	Details
27 Feb 2013	Environment protection	The Environmental Permitting (England and Wales) (Amendment) Regulations 2013 amend the 2010 Regulations to comply with the EU Industrial Emissions Directive (2010/75/EU). Most of the provisions came into force on 27 February 2013, but regulation 58(2) and regulations 4(6), (8), (12), (15) and 5 will come into force on 7 January 2014. Regulation 58(3) will come into force on 1 January 2016. lexisurl.com/iema14925
28 Feb 2013	Waste	The Rookery South (Resource Recovery Facility) Order 2011 grants permission for an energy-from-waste plant and post-treatment materials recovery facility at Rookery South Pit, near Stewartby, Bedfordshire. lexisurl.com/iema15190
1 Mar 2013	Water	The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013 identifies bodies of water used for the abstraction of drinking water in Scotland. It revokes the 2007 Order and updates its list of water bodies. lexisurl.com/iema14618
3 Mar 2013	Environment protection	The Timber and Timber Products (Placing on the Market) Regulations 2013 enforce European Commission Regulation 995/2010, which places obligations on operators who place timber and timber products on the European market, and Regulation 607/2012 on the rules concerning the due diligence system for the timber market, and the frequency and nature of the checks on monitoring organisations. lexisurl.com/iema14619
11 Mar 2013	Waste	The Waste (Amendment) (2007 Order) (Commencement No. 3) Order (Northern Ireland) 2013 brings into operation articles 5, 9, 14, 15 and 16 of the remaining repeal provisions of the 2007 Order. lexisurl.com/iema14927
12 Mar 2013	Waste	The Waste and Contaminated Land (Amendment) (2011 Act) (Commencement No. 2) Order (Northern Ireland) 2013 brings into operation section 1 (fixed penalty notices for offences under article 4) and section 2 (detention of seized property) of the 2011 Act. lexisurl.com/iema14926
13 Mar 2013	Energy	The Brechfa Forest West Wind Farm Order 2013 grants development consent for, and authorises RWE Npower Renewables to construct, operate and maintain, a wind electricity generating station with up to 28 wind turbines in Brechfa Forest, South Wales. lexisurl.com/iema14938
15 Mar 2013	Environment protection	The Pollution Prevention and Control (Designation of the Industrial Emissions Directive) (Offshore) Order 2013 designates the EU Directive 2010/75/EU on industrial emissions for the purposes of paragraph 20 of schedule 1 to the Pollution Prevention and Control Act 1999. lexisurl.com/iema15191
17 Mar 2013	Natural environment	The Forestry (2010 Act) (Commencement No. 2) Order (Northern Ireland) 2013 brings into operation the right to access provisions of the 2010 Act. The Forestry Land Byelaws (Northern Ireland) 2013 extend the right to access to all land owned by Northern Ireland's department of agriculture and rural development. lexisurl.com/iema14599; lexisurl.com/iema14600
25 Mar 2013	Environment appeals	Act of Sederunt (Rules of the Court of Session Amendment) (Protective Expenses Orders in Environmental Appeals and Judicial Reviews) 2013 makes amendments to the rules of the Court of Session 1994 by inserting a new chapter 58A. It sets out a new procedure relating to protective expenses orders in environmental appeals and judicial reviews. lexisurl.com/iema14928
26 Mar 2013	Environment protection	The Antarctic Act 2013 makes changes to annex VI to the Protocol on Environmental Protection to the Antarctic Treaty, and amends the 1994 Act. Provisions include placing a duty on operators to respond when activities they are carrying out in Antarctica give rise to an environmental emergency. lexisurl.com/iema15185

To find new regulations by jurisdiction visit environmentalistonline.com/search and enter your search criteria

Latest Consultations

4 Jun 2013
Protecting pollinators

The Welsh government is consulting on an action plan to slow and reverse the decline of pollinating insects in Wales. The proposed plan aims to provide better and more connected habitats, which will support both wild and managed pollinators in farmland, the wider countryside and in urban and developed areas.
lexisurl.com/iema15222

7 Jun 2013
Waste plastic

The European Commission is considering targeting plastic in a planned review of waste legislation it aims to complete in 2014. The commission has published a green paper to stimulate debate on the environmental and human health risks of plastic in products when they become waste and how to tackle the problem of uncontrolled disposal of plastic waste and marine litter. The commission says the paper will help develop thinking on the life-cycle impacts of plastic. EU data reveal that about 25 million tonnes of plastic waste was generated across the 27 member states in 2008, with only 5.3 million tonnes of it recycled.
lexisurl.com/iema14950

20 Jun 2013
Waste

Two consultations on preventing waste have been issued by the Welsh government. The first, on a waste prevention programme, focuses on reducing waste through, for example, reusing products or extending product life cycles, and the negative impacts of waste on the environment and human health. The second, a draft sector-specific plan for industry and commerce, aims to prevent waste and increase recycling from organisations. It will do this as part of business sustainability criteria and influencing behaviour change through the supply chain and end users, says the government. Both measures support *Towards zero waste*, the overarching waste strategy document for Wales.
lexisurl.com/iema15225
lexisurl.com/iema15224

21 Jun 2013
Conservation covenants

The Law Commission is consulting on establishing covenants as a way of boosting conservation efforts by private landowners in England and Wales. The covenant would be a private, voluntary agreement between a landowner and another body, such as a conservation charity, and commits the former to meeting specific conservation obligations. These could be, for example, to maintain a habitat or preserve a historic building. If responses to the concept of conservation covenants are positive, the commission will proceed with a law reform project, and it could produce a report and Bill by the end of 2014.
lexisurl.com/iema15218

21 Jun 2013
WEEE

How the Waste Electrical and Electronic Equipment (WEEE) Regulations 2006 should be amended to ensure compliance with the recast WEEE Directive 2012/19/EU is the subject of a consultation by the business department (BIS). BIS says the proposed changes to the WEEE system are an important part of meeting the government's commitment under the red tape challenge to scrap or improve at least 3,000 regulations that affect business. The proposals include three alternative systems for change and a "do nothing" option. BIS is also proposing a simplified means of compliance for small producers and greater flexibility that would allow local authorities to maximise the potential income from WEEE collections.
lexisurl.com/iema15219

New Guidance

Permitting and the IED	Core guidance (lexisurl.com/iema15233) on environmental permitting has been published by Defra. The updated guidance describes the main provisions of the Environmental Permitting (England and Wales) Regulations 2010 (as amended) and sets out the views of Defra and Decc secretaries of state and Welsh ministers on how the Regulations should be applied. Changes since the previous version, which was published in March 2012, reflect the transposition of the Industrial Emissions Directive (2010/75/EC) (IED); the emergence of Natural Resources Wales; and a commitment by the Environment Agency to determine permit applications within 13 weeks, subject to some exceptions. The environment department has also published new guidance (lexisurl.com/iema15234) on the IED for part A installations. Defra says the guidance will be of interest to those concerned with such installations and mobile plant.
Standard permitting rules	The Environment Agency has updated the standard permitting rules on the following operations and facilities: composting in closed systems – part A installations with a capacity of more than 75 tonnes per day (lexisurl.com/iema15228); composting in open systems – part A installations with a capacity of more than 75 tonnes per day (lexisurl.com/iema15229); on-farm anaerobic digestion facilities using farm wastes only, including use of the resultant biogas – part A installation with a capacity of more than 100 tonnes of waste per day (lexisurl.com/iema15230); on-farm anaerobic digestion facilities using farm wastes only, including resultant biogas – waste recovery operation with a capacity of less than 100 tonnes per day (lexisurl.com/iema15231); and treatment of incinerator bottom ash – part A installation with a capacity of more than 75 tonnes per day (lexisurl.com/iema15232).

Laying down the law

EIA and state liability

Despite a recent EU court ruling, **Stephen Tromans** says it may still be possible to establish a causal link between the failure to undertake an EIA and the suffering of financial loss

It is the responsibility of member states to ensure compliance with EU requirements on environmental impact assessment (EIA). Failure to do so may result in development that has unmitigated damaging effects on nearby properties from noise or other matters. But does it follow that those affected in such cases can claim damages against the state?

This was considered by the Court of Justice of the European Union (CJEU) in *Jutta Leth v Austria, Land Niederösterreich* (C-420/11). Leth made a claim for €120,000 to compensate for the alleged decrease in the value of her home as a result of the failure to carry out an EIA when Vienna airport had been developed and extended.

Leth also demanded that the local government for the province of Lower Austria be liable for any future damage arising from the late and incomplete transposition of relevant Directives, and the failure to carry out an EIA before consenting various developments.

The referring court asked the CJEU for a preliminary ruling on whether the EIA Directive (85/337/EEC as amended) had to be interpreted as meaning that EIA included the assessment of the effects of the project on the value of material assets. It also asked whether the failure to carry out an EIA in breach of the Directive provided an individual with the right to compensation for pecuniary damage, caused by a decrease in property value resulting from the environmental effects of the project under examination.

In 2004, the CJEU ruled that an individual may, where appropriate, rely on the duty to carry out an EIA under article 2(1) of the Directive – *R (Delena Wells) v the Secretary of State for Transport, Local Government and the Regions* (C-201/02). Under the *Wells* ruling, the Directive gives individuals a right to have the environmental effects of the project assessed by the competent authority and to be consulted.

In circumstances where exposure to noise resulting from a project has significant effects on individuals – in that a home is rendered less capable of fulfilling its function and the individual's environment, quality of life and, potentially, health are affected – a decrease in the pecuniary value of the property might be a direct consequence of such environmental effects.

Such matters are to be examined on a case-by-case basis. The prevention of pecuniary damage, in so far as that damage was the direct consequence of the environmental effects of a project, was ruled to be covered by the objective of protection pursued by the EIA Directive.

European law confers a right to compensation on individuals for damage caused by breaches of EU legislation if three conditions are met: the rule of EU law infringed must be intended to confer rights on them; the breach of that rule must be sufficiently serious; and there must be a direct causal link between that breach and the loss or damage sustained by the individuals.

The existence, therefore, of a direct causal link between the breach in question and the damage sustained by the individuals is an indispensable condition governing the right to compensation. The existence of that direct causal link is a matter for the national courts to ascertain, in accordance with the guidelines laid down by the CJEU, taking into account the nature of the EU rule breached.

Article 3 of the EIA Directive requires an assessment of the environmental impact of a project, but does not lay down the substantive rules in relation to the balancing of the environmental effects with other factors, or prohibit completion of projects that were liable to have negative effects on the environment. Those characteristics suggested to the CJEU in the *Leth* case that the breach of article 3 did not by itself constitute the reason for the decrease in the value of a property. The fact that an EIA was not carried out, in breach of the requirements of the Directive, did not by itself confer on an individual a right to compensation for purely pecuniary damage caused by the decrease in the value of property as a result of environmental effects, it ruled.

However, the CJEU said it is ultimately for national courts to assess the facts of the dispute and to determine whether the requirements of EU law applicable to the right to compensation have been satisfied – in particular the existence of a direct causal link between the alleged breach and the damage sustained.

Authorities may breathe a sigh of relief that failure to comply with the Directive does not automatically entitle an affected individual to damages. But they cannot rest entirely easy, as it may be possible to establish a causal link between the failure to undertake an EIA and an individual suffering pecuniary damage as a result of environmental effects on their property.

R (Delena Wells) v the Secretary of State for Transport, Local Government and the Regions

This case, from January 2004, concerned the granting of consent for mining activities without an environmental impact assessment (EIA) being carried out. Wells requested that planning permission be revoked or modified to remedy the lack of an EIA in the consent procedure, arguing that the domestic legislation infringed the EIA Directive. She took her case to the High Court, which, among other questions, asked the European courts to rule on: whether approval of a new set of conditions on an existing permission is a development consent for the purposes of the EIA Directive; and whether it is open to individual citizens to challenge the state's failure to carry out an EIA.

Stephen Tromans QC is joint head of chamber at 39 Essex Street. Contact him on +44 (0)20 7832 1111 or at stephen.tromans@39essex.com.

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Living up to expectations?

Three years into its five-year period in office, some of the UK's greenest MPs assess the performance of the coalition government. **Paul Suff** reports

Controversial changes to the planning system; the failure to include a decarbonisation target in the Energy Bill; a lack of support for a ban on pesticides containing neonicotinoids; the green light for shale gas exploration in the UK, coupled with support for a second dash-for-gas; rising greenhouse-gas (GHG) emissions; and the continuing deregulation agenda are all putting the coalition's commitment to be the greenest-ever government under severe strain.

The past 12 months have also seen the prime minister install a less than environmentally friendly secretary at Defra and replace a well-respected energy minister with an opponent of onshore wind farms – though he has subsequently moved to No.10. These appointments have further undermined David Cameron's pledge to lead an environmentally friendly administration. Sniping at the green agenda by the chancellor continues, undermining investment in low-carbon technologies and services.

There have been some positive developments, however. Mandatory GHG reporting for FTSE-listed companies begins this year, while the environment department has developed new biodiversity indicators in line with the Aichi targets and is pursuing plans to properly value natural capital (p.8). Also, two carbon capture and storage (CCS) demonstration plants have been selected for the next phase of the CCS commercialisation competition, but only after Decc failed to support any UK projects for the first phase of NER300 funding from the European Commission. Meanwhile, the green deal, the government's initiative to improve the energy efficiency of buildings, came into operation at the turn of the year and the green investment bank has made its first investments.

So, as in our previous assessments of the government's performance, the last year has produced a mixed bag on the environment front. For our 2013 review, *the environmentalist* brought together a group of MPs with an extensive background of working on environmental issues, both inside and outside parliament, to give their opinion on how the government is faring.

Energy supply …

How the UK generates and consumes energy is crucial to meeting the carbon budgets. The Energy Bill, which is currently in parliament and is designed to encourage low-carbon generation through the introduction of contracts for difference and a capacity mechanism, is the coalition's flagship energy policy. Our panel of MPs (right) are very critical of government performance in this area, particularly the absence in the Bill of a 2030 decarbonisation target.

Despite one-half of the coalition embracing the need for a target limiting the amount of carbon that can be emitted from power stations over the next 20 years, the Energy Bill includes only the possibility that one will be introduced in 2016, after the next general election. **Caroline Lucas** says there is no justification for its omission. "A decarbonisation target makes good economic sense as well as good environmental sense," she claims, adding that most industry bodies, including the CBI, back a target.

Provisions in the Bill will see the Renewables Obligation replaced by a complex system of contracts for difference from 2017. Coupled with the absence of a decarbonisation target, setting the long-term trajectory for energy policy and providing certainty for investors, this could have dire consequences for renewable energy technologies, warns **Barry Gardiner**. "Incentives for renewables simply fall off a cliff at the end of the decade," he says.

Government support for unconventional sources of gas is another cause for concern, according to the panel. "Shale gas now seems to have taken over the energy agenda without any regard to the implications," says **Joan Walley**. "It has diverted attention away from what the government should be focused on: energy efficiency and support for renewable forms of generation."

Zac Goldsmith describes the growing support across government for shale gas exploration as depressing. "A very large number of people in parliament, including senior government ministers, are pinning all their hopes on shale gas to provide

Barry Gardiner

MP for Brent North; member of select committees on energy and climate change and environmental audit; Ed Miliband's special envoy for climate change and the environment.

Zac Goldsmith

MP for Richmond Park and North Kingston; member of the environmental audit committee; former editor of *The Ecologist* magazine.

Caroline Lucas

MP for Brighton Pavilion; member of the environmental audit committee; former leader of the Green Party in England and Wales; previously MEP for South East England.

Joan Walley

MP for Stoke-on-Trent North; chair of the environmental audit committee; named ePolitix environment champion in 2004 for her parliamentary work on the environment.

Alan Whitehead

MP for Southampton Test; member of select committees on energy and climate change and environmental audit; member of the committees scrutinising several major environment bills, including the Climate Change Act 2008; regular columnist for *the environmentalist*.

abundant future energy supplies without any evidence," he says. "Putting aside the potential environment issues, like possible water contamination, the capacity for shale gas to deliver any kind of energy cost savings in the UK has got a huge question mark against it."

Lucas agrees. "Organisations like Deutsche Bank and the IEA [International Energy Association] have examined the economics of shale gas extraction in the UK and concluded that it is just not viable," she reports.

Shale gas is just one strand of a wider gas strategy. Last year, the government declared that gas would provide a significant contribution to electricity generation into the 2030s, and the energy secretary confirmed support for the construction of up to 20 new gas-fired power stations. **Alan Whitehead**, Labour MP for Southampton Test, says the strategy is a mistake and believes this second dash-for-gas will mean the UK will renege on its carbon budgets and targets.

"The most disturbing development in energy policy is not that some people think shale gas will ride to the rescue of the UK's diminishing domestic energy supplies, but that it is part of a strategy that in future will see us rely on using very large amounts of gas to generate electricity," warns **Whitehead**. "As a result of the strategy, the UK will be emitting around 200gCO_2/kWh," he says. "And if that's the case, it completely busts the carbon targets."

… and demand

Despite the high-profile absence in the Energy Bill of a decarbonisation target – all five of the panel are backing an amendment to impose such a target – the MPs believe that the lack of measures addressing energy demand is equally unjustifiable.

"That energy efficiency is not a key element of the Bill is quite extraordinary," exclaims **Gardiner**, Labour MP for Brent North. "Rather than putting in place energy reduction and demand side measures, which are absolutely vital to reducing emissions, the government has instead focused on incentivising the market towards gas and nuclear power."

"Energy efficiency was the one thing in the Bill that would make it truly valuable," agrees **Goldsmith**. "There is no excuse for its omission."

Promised amendments to the Bill promoting energy efficiency have yet to appear to the consternation of the panel, some of whom sat on the committee to scrutinise its contents. "It's been through the committee stage and the energy-efficiency proposals have not materialised. That is unacceptable," says **Gardiner**.

Goldsmith acknowledges that it would have been preferable for MPs to have had the opportunity to scrutinise the government's energy-efficiency plans, but remains hopeful they will eventually emerge. "We have to push for the inclusion of a clear, crisp amendment on energy efficiency," says the Conservative MP for Richmond Park and North Kingston.

The MPs are incredulous about the suggestion that the green deal and the ECO – the energy companies' obligation, which has replaced the CERT (carbon emissions reduction target) and CESP (community energy-saving programme) schemes – might provide

the necessary fillip for the widespread installation of energy-efficiency measures in UK buildings.

"The green deal is badly constructed," argues **Lucas**. She points out that energy firms are already struggling to give away free insulation because people do not want the associated disruption to their homes and are sceptical about the benefits.

"If you stick a 7% interest rate on green deal finance packages, why would people bother?" she asks. "The lack of demand for energy-efficiency measures is a market failure that the government is trying to solve through a market mechanism. The green deal is a misguided way of improving efficiency."

Whitehead believes the green deal is at least moving in the right direction, but says the government needs to lift its aspirations for the scheme.

"The main problem is that the resources and arrangements underpinning the green deal and ECO are laughingly short of what is required," claims **Whitehead**.

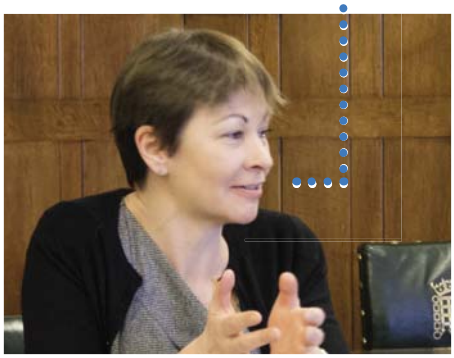
He asserts that the fault lies with the Treasury. "It seems to be saying that introducing such measures is fine, but we're imposing a cap on funding," says **Whitehead**. He claims the Treasury's stance, and that of some other departments, notably the department for communities and local government (Dclg), effectively undermine some of the good work being done by Decc.

"Greg Barker and others in the energy department often talk a very good case, but the Treasury and its levy cap, and Dclg's shelving of proposals requiring property owners to install measures to improve their building's energy efficiency when carrying out other renovations, are examples of other parts of the government undermining that ambition.

"Some departments take shots at the green policy agenda and there is no attempt to rein them in. There's a failure by No.10 to get the whole administration to


> Improving energy efficiency is a 'win-win', in that it will cut emissions and create jobs, and it's a tragedy that the coalition government is failing to recognise that





pull together to address long-term tasks around the environment, " says **Whitehead**.

Goldsmith concedes that the Treasury often casts an unwanted shadow over green policy. He describes the government's decision to establish the natural capital taskforce in the Treasury as a bold move, but acknowledges that the chancellor and his team are not yet ready to embrace a way of thinking that values the natural environment. "Greg Barker recently said that governments come and go, but the Treasury always stays the same," he recalls.

"I get the sense that green aspirations in the coalition government are being easily sidetracked by short-term ambition or a lack of joined-up thinking across Whitehall," says **Whitehead**.

Economic growth

Lucas says the government's failure to embrace either a decarbonisation target or an effective energy-efficiency strategy risks securing its primary objective: economic growth. "It is conceivable that the government fears environment policies will impact negatively on the economy," she says. "But whether or not you support such a notion, installing energy-efficiency measures and developing renewable technologies will provide jobs. This is a missed opportunity in terms of getting people back to work and dealing with the budget deficit."

Walley agrees and notes that the government rarely uses the same economic argument to galvanise support for renewables as it does for nuclear power. "One of the main arguments used to justify the construction of new nuclear power plants is that it will create lots of jobs, but there is no similar understanding of the employment that would come from renewables or energy efficiency," says the Labour MP for Stoke-on-Trent North.

"Yes, improving the energy efficiency of UK buildings is something that looks suspiciously like a 'win-win', in that it will create jobs and help tackle GHG emissions, and it's a tragedy that the government is failing to recognise that," says **Lucas**.

Referring to figures from the business department showing that sales of low-carbon environmental goods and services (LCEGS) grew 4.7% between 2009/10 and 2010/11, far outstripping the overall performance of the UK economy, which only increased by 0.7% in 2011, **Gardiner** wonders why the government is not doing more to support the LCEGS sector. Indeed, he believes the policies of the coalition are hindering the development of green technologies and wants the government to do more to create the supply chains and skills necessary to establish a robust manufacturing industry in the UK for green-energy products.

"It needs to be part of a wider industrial strategy but isn't. That's because the government has failed to understand how green technology can transform the economy," he says. "That failure is just as damning as not setting a decarbonisation target."

The panel is more upbeat about the green investment bank (GIB). "£3 billion [the amount of seed funding provided by the government] is not a vast sum of money, but the GIB is a new bank and investing in a responsible way," acknowledges **Goldsmith**. "I think there is a good chance the GIB could emerge as a really significant player in funding green technologies."

"We need such institutions to promote the green agenda. And if the bank is successful it will help spread the currency about environmental ideas," states **Walley**.

The natural environment

In January 2013, the government officially confirmed its decision to row back on plans to sell 15% of

A lot of MPs, including several ministers, believe shale gas will provide abundant future energy supplies without there being any real evidence

England's public forest estate, but **Gardiner** says the emergence of ash dieback disease demonstrates that heavy budget cuts to the Forestry Commission, which were not rescinded at the same time, are misguided and place UK woodlands at risk.

"Thirty-nine vectors of disease and pests have been identified as serious threats to our forests," he says. "Rather than cutting 60 scientists, we need to improve research by the commission."

"We are losing expertise rather than gathering it, which is wrong," agrees **Goldsmith**, though he believes that the government was genuinely shocked at the reaction to its initial plans for publically-owned forests and is now seeking a more consensual approach to how it manages such woodlands.

"There are signs of an improvement," he says. "David Heath [Defra minister for agriculture and food] has developed a plan that is generally acceptable to stakeholders and which I think is an example that the government has learned a lesson."

Other members of the panel are not convinced that the coalition is taking the natural environment sufficiently seriously. "There's a complete lack of understanding in the government about the role that forests and woodlands play in our environment, biodiversity and ecosystems services," claims **Gardiner**. "For me, this is the litmus test for the government's green credentials – they just don't get ecosystems; they don't understand biodiversity; and they don't even comprehend that the only reason a change in climate matters is because biodiversity can't keep pace with the rate of change and therefore ecosystems services suffer."

Gardiner believes that one reason the government has failed sufficiently to acknowledge the significance of ecosystems services is because it has placed climate change in a "compartment" without understanding its impact on the environment. "And nothing reveals that more clearly than its approach to forests," he says.

"Humans are very good at adapting, but ecosystems are not. Reducing every discussion on the environment to climate change is a mistake in terms of policymaking," agrees **Goldsmith**.

Lucas, Green MP for Brighton Pavilion, raises the issue of marine conservation zones (MCZs) and says she is concerned that the government's recent selection of only 31 out of a promise to designate 127 such areas appears to be shrouded in mystery.

According to **Gardiner**, the government has moved the goalposts in how it selects MCZs. "Selection was originally going to be based on the best available science," he explains, adding that the government then excluded any information that was more than six years old. But, he points out, the UK initiated the whole taxonomy movement and, during colonialism, went out across the world collecting information about species and biodiversity. He describes the decision by the government to ignore such data as "insane".

Two more years

The next general election is due in May 2015, but there is much the government needs to achieve during its five years in office to set the country on a path to a greener economy, say the MPs.

"Meeting our carbon budgets, decarbonising the economy and improving protection for the natural environment all need to happen on this government's watch. We need the coalition to seriously get to grips with these issues," says **Whitehead**.

"This is a one-off opportunity; we won't get a second go. So, this government has to be the greenest government ever."

the environmentalist would like to thank our panel of MPs and Richard Green in Alan Whitehead's parliamentary office for organising the event.

In shale we trust

With government support rising for shale gas exploration, **Paul Suff** talks to Cuadrilla about how it is limiting the risks to local environments

In his recent budget statement, George Osborne declared: "Shale gas is part of the future. And we will make it happen." Francis Egan, CEO at Cuadrilla Resources, the first company to explore reserves of shale gas in the UK, says he expects the 1,200km^2 of Lancashire that his firm has a licence to drill – stretching from Fleetwood in the north to Southport in the south – to be home to up to 60 multi-well pads (sites containing about six separate wells) over the next 30 years.

"The pace of expansion will depend on government policy and the price of gas," Egan told *the environmentalist*. "The economic case of shale gas is currently strong, though we still have to overcome safety and environmental concerns. But if all goes well in the UK, then there's a good chance the industry will expand across Europe."

Estimates from the gas sector indicate that around 10% of forecast reserves are recoverable, though some companies in the US, which has a highly developed shale gas industry, claim to be able to recover as much as 40%. Egan believes 10% is a realistic figure for the Bowland basin in Lancashire. "That's a conservative estimate," he says, noting that advances in technology may make it possible to recover more shale gas in time. "The oil industry is going back to abandoned reservoirs in the North Sea because it now has the technology to extract more oil." He claims the shale gas reserves in Lancashire have a current market value of £136 billion.

Regulated activity

Drilling for shale gas involves both vertical and horizontal drilling, combined with hydraulic fracturing (or "fracking") to open up gas deposits that have been locked away for millions of years in tightly bound shale rock formations. Hydraulic fracturing pumps water, sand and chemicals into the rock at high pressure to extract the gas. The sand acts to prop open the fracture and let the gas flow, while the chemicals reduce friction between the water and pipe, clean the water to prevent bacteria clogging a fracture or break down any calcium to help create an initial gap. Fracking uses a significant amount of water – in Cuadrilla's case, around 8 million litres for a full 10-stage fracture, up to 40% of which returns to the surface.

Once the drilling is completed, shale gas can flow for around 30 years with minimal disruption to the surrounding area, though well and pressure monitoring remains ongoing. The construction of the site and the drilling phase, however, raise several environmental concerns, specifically its potential to: contaminate groundwater and surface water with methane and chemicals; deplete local water supplies; trigger seismic activity; and disrupt habitats. And, like any extractive or industrial infrastructure, particularly one running 24 hours a day, there may be problems with noise and traffic movements, for example.

Cuadrilla's operations in Lancashire – which are managed by its subsidiary Cuadrilla Bowland – are regulated by the Environment Agency and the Health and Safety Executive, under licences issued by Decc, with planning permission from the county council.

The agency is responsible for permitted activities, including the safe disposal of wastewater at a treatment works. Cuadrilla requires a permit for this so-called "flowback" fluid, because the quantities of naturally occurring minerals, such as sodium and chloride, mean they are likely to exceed limits imposed by schedule 23 of the Environmental Permitting (England and Wales) Regulations 2010. Hydraulic fracturing to exploit shale gas reserves is listed as an industrial activity involving naturally occurring radioactive materials, so a permit is necessary for the disposal of flowback fluid where radioactive substances are present.

Under the Water Resources Act 1991, a shale gas operator is required to notify the agency of its intention to drill a borehole and provide details of well construction and how it will protect groundwater. A permit is required if the agency believes groundwater is at risk. The chemicals used in fracking are also subject to regulation,

Francis Egan, CEO at Cuadrilla Resources

The economic case for shale gas is currently strong. If all goes well in the UK, there is a good chance that the industry will expand across Europe

although only those assessed by regulators as non-hazardous pollutants under the Groundwater Daughter Directive (2006/118/EC) are permissible.

In its guidance on regulating shale gas operations, the agency says it will adopt a risk-based approach, based on available evidence. "We do not apply a one-size-fits-all approach," states the regulator. It expects operators to demonstrate that their proposed activities are not harmful to people or the environment, and says it will thoroughly inspect and monitor shale gas operations due to the "relative novelty" of the techniques deployed. The agency reports that between March 2011 and January 2013 it made 16 visits to Cuadrilla's Preese Hall site, for example, with seven spot checks to sample flowback fluids. A total of 18 further visits were made to Cuadrilla's other Lancashire sites over the same period.

Poor air quality near shale gas wells is another cause for concern, although Tony Grayling, head of environmental policy at the Environment Agency, told the select committee on energy and climate change that the regulator was "not expecting big air quality implications". However, the agency will require site operators to adopt "best available techniques" to manage shale gas emissions.

Traffic lights

Shale gas exploration in the UK got off to a rocky start. In May 2011, Cuadrilla's operations at its Preese Hall site were suspended after two seismic tremors in the area. The subsequent investigation revealed that hydraulic fracturing had triggered the seismic activity, which measured 1.5 and 2.3 on the Richter scale.

Fluid injection at depths of 2–3km was ongoing at the site shortly before the earthquakes occurred, and research for Decc by experts at the British Geological Survey (BGS) concluded that the timing of the events, in conjunction with the fluid injection, suggests that they may be related. The BGS also noted that it is well established that fluid injection can induce small earthquakes, but says that typically, these are too small to be felt. "We would not expect earthquakes of these relatively small magnitudes to cause any damage," it said.

Decc consequently imposed new controls on operators to mitigate the risk of seismic activity. These include mandatory risk assessments and action plans to address seismic risks. Operators will have to monitor activity and submit information to the energy department.

Cuadrilla plans to adopt a traffic light system, already used in the Netherlands and Germany, which will enable operations to be quickly shut down if data reveals unusual levels of seismic activity. A seismometer network at each well will provide the data and ensure seismicity is contained at levels that will not cause concern, according to the company. Egan says the data will allow the firm to adjust the injection volume and rate during the fracturing process to help prevent noticeable seismic activity.

Hydraulic fracturing at Preese Hall

The Bowland shale is more than 1.8km below the surface and extends to a depth of more than 3km. Each well will consist of multiple horizontal branches or "laterals" from the borehole, over a distance of 1km to 1.5km. Whereas fracturing each lateral in the US typically takes only a few hours, Cuadrilla's traffic light system means the company plans to fracture in stages, working back along the lateral with each stage roughly 61metre apart. "Halting the operation after every stage is unique to the UK," explains Egan. "It will mean the fracturing process will take months rather than hours, but will enable us to do more checking.

"Hopefully, once we've demonstrated that there is no risk, we'll be able to speed up the process."

Water pollution

Water pollution is one of the major concerns associated with exploiting unconventional sources of gas through fracking. There have been several pollution incidents in the US, with local aquifers contaminated. However, MPs on the energy and climate change committee in 2011 found no evidence that the fracking process poses a direct risk to underground water aquifers, provided the drilling well is properly constructed. Similarly, the Royal Society reported in 2012 that "upward flows of fluids from the zone of shale gas extraction to overlying aquifers via fractures ... is highly unlikely".

The aquifer in the area that Cuadrilla is exploring is not used as a source of drinking water because of its high salinity. Nonetheless, Cuadrilla claims to be operating as if it was suitable for human consumption. "That doesn't alter our strategy to protect groundwater," says Egan.

Good well design is something he emphasises, reporting that Cuadrilla always has at least three layers of steel casing its wells, with sealed with cement. The steel

casings – surface, intermediate and production – ensure there is no pathway between the fractures and aquifers, he maintains. Prior to drilling commencing, cement joints undergo pressure testing to ensure there is no leak and they are sufficiently strong to withstand the drilling operation.

The depth of the Bowland shale is also a factor in the low risk of operations polluting groundwater in the area. Typically, the aquifer is between 110m and 830m below the surface, while the shale tends to start at a depth of around 1.8km. "The rock is almost a mile thick, which is unusual and differs from the US where it is generally only a couple of hundred feet thick," says Egan. In addition, an impermeable layer of Manchester marls, with a density of around 110m, sits between the groundwater strata and the shale. "All our sites will have groundwater monitoring stations," confirms Egan.

The fracturing fluid that Cuadrilla plans to use consists mostly of water (99.5%), with sand making up a further 0.45% of the mixture. The remainder is the chemical, polyacrylamide, which acts as a friction reducer. Egan confirms that the company also has clearance from the Environment Agency for biocide and hydrochloric acid, though it is unlikely to use them.

Egan describes the Bowland shale gas as "very clean" – 98% methane, with no CO_2 or the highly toxic and flammable hydrogen sulphide, for example. "That makes processing the gas fairly straightforward, as we only have to separate out the flowback fluid," he explains.

Between 20% and 40% of the fluid will flow back to the surface, where Cuadrilla will store it initially in double-skinned tanks before lorries transport it to a wastewater treatment plant. Egan says all Cuadrilla sites, which cover an area of around 1.5 hectares, have an impermeable base, followed by a layer of hardcore to protect the surrounding area from pollution. There are also ditches to collect rainwater and any fluid accidentally spilled at the site, during the transfer of wastewater into tankers, for example.

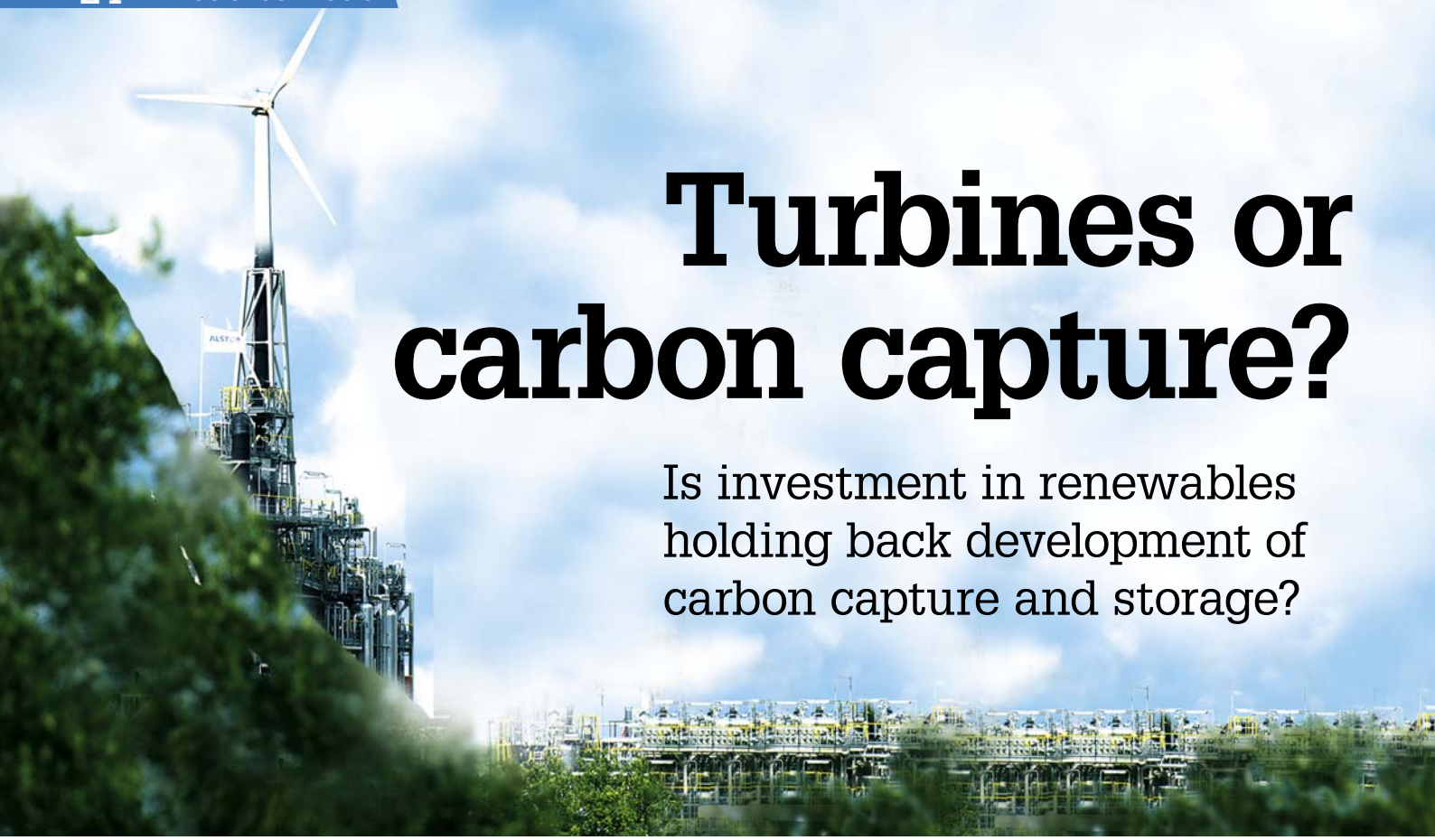
Cuadrilla aims to eventually follow the example of the US shale gas industry and recycle the flowback fluid in its operations. That would require a change in how the water is classified by the Environment Agency, which currently views it as waste. "As the industry develops in the UK, that definition is likely to change, so we'll be able to treat flowback fluid and reinject it. That's the way forward," says Egan.

United Utilities supplies Cuadrilla with water for its operations in Lancashire from the mains supply. This has an important advantage for Cuadrilla, explains Egan. "The water has already been treated by the supplier, so we don't have to use many chemicals."

Just another industrial process?

Many of the safety principles underpinning shale gas exploration and extraction, such as the need for good well construction and monitoring systems, mimic those widely employed in the recovery of conventional gas and oil. "Providing you construct the well properly there shouldn't be any problems," says Egan.

The industry differs in other ways, however, which potentially makes it less risky than other extractive operations. The gas flow rate of a typical sandstone gas reservoir is 200–300 million cubic feet a day. The equivalent daily rate for a shale gas well is 5–6 million cubic feet. "That's why you need to drill more than one or two boreholes; to get the gas out," explains Egan. He also says the relatively low flow of gas significantly reduces the risk of a Deepwater Horizon or Piper Alpha scale blowout. "The risk is simply not there," he says.



Turbines or carbon capture?

Is investment in renewables holding back development of carbon capture and storage?

Over the past 10 years, renewable energy technologies have evolved from research and development to demonstration and wide-scale deployment despite their high initial cost. Even with the significant cost reductions achieved over this period, renewables, in most cases, continue to produce electricity at higher costs than their conventional counterparts. Therefore they would not have been able to grow out of niche markets to widespread deployment without additional support from governments.

Before the liberalisation of the electricity markets in the 1990s, generation was a low-risk business with guaranteed returns based on reimbursement of cost plus a fee, which led to a secure supply with high-capacity margins, but not the most cost-effective solutions as there were few incentives to reduce cost. Competition after market liberalisation has driven down costs and, together with the EU emission trading scheme – a market-based instrument introduced in 2005 to incentivise investment in low-carbon technologies and innovation – has led to a complex and volatile marketplace for non-renewable technologies.

Many countries have also introduced non-market-based instruments to support renewable energies, such as feed-in tariffs (FITs), contracts for difference or preferred market access. This has created the necessary framework to deploy renewable energy technologies but it is also leading to significant market deterioration as subsidised renewables have taken up a significant share of electricity generation.

From an investor's point of view, when investments are not triggered by the market but by state interventions for specific technologies, the optimum strategy is to invest only in technologies with very low financial risks and guaranteed profit margins – for example, from FITs or capacity payments. The cost-effectiveness of greenhouse-gas emission reductions or electricity generation does not play a role in the investment decision, it is only about minimising risks and securing profit margins. Furthermore, every power-generating development built outside market conditions devalues market-driven investments.

This has led to a situation in Europe where little or no new market-driven fossil-fuelled capacity will be built, and therefore the prospects for carbon capture and storage (CCS) is also blocked by the "out-of-market" deployment of renewables. We need to acknowledge that interventions that give investors certainty for their investment, like FITs, should only be applied to bring technologies from research and development stages to early deployment – an area which most renewable technologies have left, but where CCS is currently.

An additional dilemma for fossil-fuelled generation is that gas- and coal-fired plants' ability to offer grid stability and security of supply is not separately valued, as the market is focused only on energy. Fossil-fuelled capacity will be needed as a backbone for a reliable and cost-effective supply; the advantages of a balanced energy mix have not only been true in the past, but will remain so in future.

I predict that the future deployment of renewable power will be based on the visibility of its costs. If delivering decarbonised power at the lowest cost, while maintaining security of supply is the important goal, then CCS must play a key role. However, CCS cannot be delivered by the market alone if that market is destroyed by significant interventions to support the deployment of renewables.

Dr Peter Radgen is head of the E.ON innovation center for carbon capture and storage.

There are concerns that George Osborne's strong support for gas might see investment sucked from under the feet of renewables. That said, with investment in new combined-cycle gas turbines on hold while electricity market reform is up in the air, the gas sector might view things in the opposite light. Similarly, many view nuclear as discouraging investment in renewables, or at least distracting Decc in its efforts to bring forward renewables. But the idea that investment in renewables is holding back development of carbon capture and storage (CCS) technology is a new one on me.

And it's no wonder I have not heard this mooted – it's a bizarre idea. The deployment of CCS technology is not standing still because lenders are weighing up carbon capture options versus renewable ones, and opting for the latter. It's because the technology is not yet proven. Far from having its hand bitten off, the energy department had to relaunch the UK's £1 billion CCS commercialisation programme. Companies were pulling out, not fighting to usurp each other.

I wonder if this isn't really a question of whether the existence of renewables somehow threatens the establishment of carbon capture and storage? Or perhaps simpler still: is the technology better than renewables and should the UK invest in CCS instead?

It will come as no surprise to readers that my answer to both these questions is "no".

However, I won't extol here the benefits of renewables, nor will I criticise CCS technology. There are ways in which CCS and renewables work well together. Biomass coupled with CCS is the only combination of technologies that could actively pull CO_2 out of the atmosphere and lock it back underground. And renewables are not going to provide 100% of our energy in the short- to medium-term.

I have my own views on which energy source – gas or nuclear – would work better alongside renewables and recently spoke at a debate on the subject. For the record, I did so in a personal capacity and the Renewable Energy Association does not have an official line on other partners in the energy mix, beyond pointing out that we should minimise energy consumption before seeking to fill the gap. Thereafter, first priority should be to use as much renewable capacity as possible as fast as possible, followed by the most sustainable way to fill the remaining gap.

My personal view is that gas is a better fit with renewables than nuclear. Much of my reasoning also holds true for fossil-fuelled generation with no CO_2 emissions. Fossil fuels are flexible and, if partnering with intermittent renewables, flexibility is better than inflexibility. I also feel it is better to store CO_2 than it is to store radioactive waste from nuclear plants.

One cannot get away, however, from the fact that thermodynamics, and therefore economics, are not on the side of capturing and storing carbon. CCS reduces the efficiency of the conversion of fuel to energy and, even if that is not coupled with increased CO_2 emissions, it uses up fossil fuels inefficiently when they should be treated with respect, given the resources expended in extracting them from the ground.

CCS is a transition technology. We are buying time while we get renewables into place. Renewables are the only technologies where free and non-polluting fuel, which will not run out, delivers itself to the power station. With credentials like that, nothing should be allowed to hold renewables back.

Gaynor Hartnell is chief executive of the Renewable Energy Association.

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Cool running

An innovative cooling system is helping to cut data centre energy consumption at Nottingham Trent University. *the environmentalist* finds out how

Nottingham Trent University (NTU) is one of the most sustainable universities in the country. In 2011, it was ranked top out of 142 universities in the people and planet green league, published in the *Guardian*. Last year, the university was ranked in the top five.

The initiatives for which NTU is consistently placed so highly include avant-garde elements such as a sedum roof, an "intelligent lift" system, which minimises the distance the lifts travel, and windows that open and close automatically depending on the internal temperature. It has also installed mainstream energy-saving measures such as voltage optimisation and insulation.

Environment manager Grant Anderson reports that the key to this strong environmental performance is a fierce commitment to sustainability on the part of the university and a determination to treat environment issues with the same priority as its other core operations.

NTU's green agenda is ambitious. It plans to halve its carbon footprint by 2020 against a 2005 baseline, and one of the main areas of activity is to reduce the energy impact of the university's data centres. The university's strategy to improve the energy efficiency of its computing network and enhance data resilience is multipronged. It includes replacing the traditional air-conditioning system at one of its data centres with an evaporative cooling system powered by renewable energy. As a result of the project, NTU is on target to achieve an 89% saving in annual energy consumption by the data centre at its Clifton campus.

Considering the options

The impetus in 2010 to reduce the environment impact of NTU's data operations came partly as a result of seizing the opportunity when it presented itself. The expansion and remodelling of the Clifton campus – the second-largest of the university's three campuses – meant that it was necessary to enlarge and move its data centre. Although not representing a huge proportion of the NTU's annual £5 million utilities bill, at around £200,000 the energy consumption of the data centre was still significant.

Before the data centre's refurbishment, cooling for the IT hardware was provided by a 150kW air-conditioning system split over several locations. The servers had been housed in a number of different rooms, which had bumped up their energy requirements. Relocating them to a single, purpose-built site immediately improved the energy efficiency of the computing system.

In investigating the options for improving the data centre's environmental performance, the NTU was forced to rule out significantly reducing the cooling requirements for the servers because IT equipment needed to be upgraded and additional hardware installed. Although the temperature at which the equipment needs to be kept has been raised slightly (to 24°C), the estates team knew that this change alone would not have sufficient impact to realise NTU's sustainability aims for the project.

The university also investigated sourcing a more energy-efficient air-conditioning system, but found nothing suitable on the market.

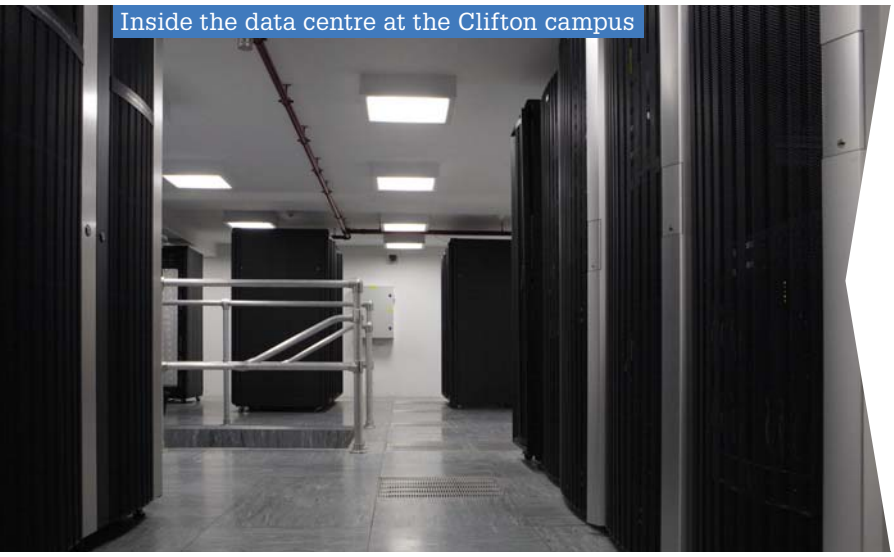
Evaporative cooling

The team then turned to the possibility of installing an evaporative or "adiabatic" cooling system that could maximise the use of "free cooling" for much of the year. This kind of system can maintain a relatively stable temperature and humidity level in the server room irrespective of external conditions. To meet the 150kW cooling requirements of the data centre, NTU needed to install five evaporative cooling cubes – each measuring 1m³ and having a 35kW cooling capacity.

The system works because the temperature of dry air drops significantly when water evaporates into it. The cubes take in hot, dry air and, following the evaporation of the water circulating in the system, pump out cool air. Scott Brooks, senior energy and sustainability engineer at NTU, describes the process as a large volume of air being passed over filters in the cubes that act as giant, wet sponges. The result is a large output of cool air. It was estimated that the system would require about 22,847kWh of electricity annually, taking into account the free cooling that it would benefit from in the winter when the required energy input would be reduced as a result of the lower external temperature. This compares with the 219,342kWh of electricity used each year by the university's previous cooling process.

Using an evaporative system to cool a data centre is an innovative choice and the fact that the university struggled to find more than a couple of suppliers for the cubes was proof of the new ground that it was breaking.

Nottingham Trent University's city centre site



Inside the data centre at the Clifton campus

Evaporative cooling cubes act as 'giant, wet sponges'

45 photovoltaic panels help to power the data centre

Because such a system had not been tried and tested in many similar situations, NTU needed to research it thoroughly before opting for installation. Concerns that had to be addressed included the noise level of the system, the risk of legionella developing if the system reached a certain temperature and its ability to cope with the cooling requirements of the data centre.

The university resolved all of these issues before embarking on the project, with its engineers visiting sites with similar systems to assess noise levels, and the implementation of strict control and monitoring procedures to negate the possibility of legionella.

Building the infrastructure to house the data centre and its new evaporative cooling system took several months. The system needs large 60x60cm ducts to pass around the large volume of air necessary to cool the room, and the floor needed to be raised to accommodate them. The work was completed in June 2011 and the system has performed as expected and with few teething problems.

The only issues that have arisen relate to control of the system. For example, the estates team realised early on that the dampers – the grills that open and close on the cubes – need to be fully closed if the fire alarm is activated to ensure the gas suppression system can operate properly.

According to Brooks, the system has proved that it can function consistently and effectively even on days when the temperature and humidity outside are high.

A multipronged approach

At the outset of the project, NTU decided to reduce carbon emissions on three fronts. As well as introducing the evaporative cooling system, the information systems department introduced "server virtualisation" software to maximise the efficiency of the university's servers. This change has resulted in a considerable reduction in energy demand because if one server is functioning at or below a certain capacity, its operations can be switched to another server with spare capacity.

"The servers consume a high proportion of energy even when functioning at a low level so focusing the demand on as few servers as possible can really heighten the energy efficiency of the data centre," Brooks explains.

Virtualisation can significantly reduce the number of servers needed in a data centre and, therefore, have a dramatic positive impact on electricity consumption.

The final piece of the data centre's sustainability jigsaw is renewable energy. Brooks explains that NTU enhanced its cooling system by connecting it to a 10kW photovoltaic (PV) system to minimise demand from the mains supply during periods of high usage.

The array of 45 PV panels was installed on the roof of the building where the data centre is located. The panels are wired directly into the electrical panel that provides power to the cooling system, so it can tap into the renewable energy source whenever possible. The PV system provides more than one-third of the cooling system's energy needs and in 2012 it saved seven tonnes of carbon.

Return on investment

It cost £72,000 to install the evaporative cooling system and build the necessary infrastructure. It was funded by the university's ongoing loan for sustainability projects from Salix Finance and the Higher Education Funding Council for England's "revolving green fund", which provides finance to higher education institutions to reduce their carbon emissions. Eligibility for funding under these arrangements requires projects to meet a strict five-year payback period for the loan. Payback for the cooling system is forecast at less than four and a half years.

This relatively short payback period is achievable because of the energy efficiency of the cooling system. Compared with the traditional air-conditioning units it replaced, the new system saves more than 195,000kWh in electricity a year, which equates to around 106 tonnes fewer carbon emissions. Annual cost savings are estimated to be £16,500. The 174kW evaporative cooling system costs £1,900 in electricity consumption compared with £18,400 for the 150kW air-conditioning system.

Because the payback time on the PV system is longer – between nine and 10 years – this element of the project was not eligible for funding through the university's revolving green fund loan. The £40,000 cost of buying and fitting the university's first PV array was met internally.

The estates team is so pleased with the performance of the evaporative cooling system and its positive effect on the data centre's environmental impact, that it has investigated the possibility of installing a similar system at another university site. However, with large ducts and other specific infrastructure necessary, there are few locations where such a system can be installed. NTU has been able to rollout PV more easily, with panels installed across its three campuses.

Learning points

As far as Anderson and Brooks are aware, no other establishments were using the same combination of technologies – evaporative cooling, server virtualisation and PV – when NTU's system came online. "It is the combination of these three technologies and how they work together in a data centre that makes the project unique and innovative," says Anderson. The number of suppliers of evaporative cooling systems is now growing, however.

Aside from the technologies selected for the initiative, a large part of the success of the project is due to the close collaboration between the estates team and the information systems department. "The information systems team was very open to considering less traditional solutions," says Brooks.

His advice to other organisations considering refurbishing a data centre is to investigate the potential and not be too risk averse. "Don't be discouraged by the possible risks, such as legionella in this case, as there could be very little basis for them if properly researched – and you may find that the environmental benefits and financial return-on-investment far outweigh the perceived risks and actual cost."

Data centre GAMES

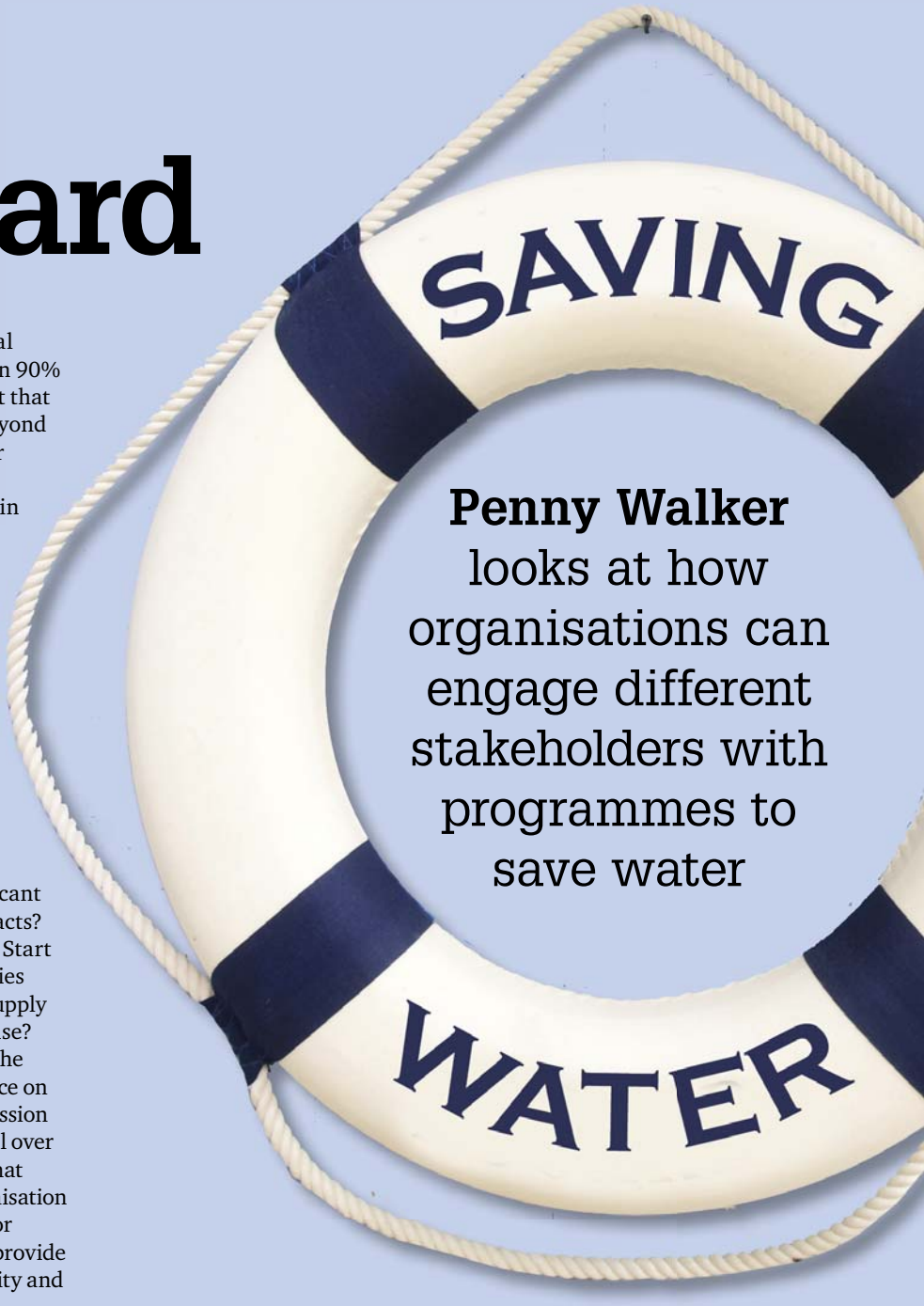
Emissions from data centres worldwide are around half the volume produced by the global aviation industry and more than the total emissions of the Netherlands, according to the European Commission. Recent research funded by the commission aims to make the facilities that store data remotely more energy efficient.

The project, called GAMES (green active management of energy in IT service centres), has developed methodologies, software tools and services, and metrics to investigate and measure the energy consumption of IT infrastructure in a more detailed way than was previously possible, all the way down to server level. It helped cut energy consumption by more than 20% at the two data centres where it was tested, the commission reported in March 2013.

The data centres at Pont Saint Martin in Italy and Stuttgart in Germany were already relatively energy-efficient. At the Italian site, which is used mainly for hosting services, the technology improved its PUE – power-usage effectiveness, the ratio of the total power used by the facility, divided by the power delivered to its IT equipment. An ideal PUE would be 1, while the average is about 1.83 to 1.92. At Pont Saint Martin the project saw the data centre's PUE improve from 1.35 to 1.25, a considerable energy saving. Similar improvements were recorded at the Stuttgart site – a high performance computing centre operated by the local university – despite the different technology and applications of the centre.

"For data centres to become more efficient, it is essential to know how energy is being consumed. Our focus was therefore to develop effective monitoring solutions that allow performance and processes to be adapted in real time," says Dr Massimo Bertoncini, from Engineering Ingegneria Informatica in Italy, who coordinated a team of researchers.

All aboard



Penny Walker looks at how organisations can engage different stakeholders with programmes to save water

For drinks company Diageo, agricultural suppliers typically represent more than 90% of its water footprint, so it is important that the company's water strategy looks beyond its own four walls to consider sustainable water management and risks in the supply chain.

By contrast, what matters most for Unilever in tackling its global water footprint is reducing consumers' water use when they are doing laundry, showering and washing their hair, particularly in countries where water is scarce. Asking office staff to report dripping taps will contribute to the firm's water efficiency, but it is much less useful than innovating a generation of products that use less water for cleaning. So you need engage different audiences.

Great questions

The first step in engaging people to improve water efficiency is to understand what is significant for the organisation. Where are its biggest impacts? What are the material risks and opportunities? Start by identifying the big water-related dependencies or impacts in the value chain. Are they in the supply chain? Operational? End use? Or somewhere else?

Consider the organisation's mission: what is the enterprise seeking to do? How is a hidden reliance on cheap, unlimited access to water putting that mission at risk? Which parts of the value chain would fall over if the price of water rose significantly? What if that water wasn't available? Or if the water the organisation consumes became a source of local community or political unrest? And where might the business provide something more cost-effective, or of higher quality and greater resilience, if it could do it leaner?

The answers to these questions will tell the environment or sustainability team who they need to engage and what, broadly, it will be asking them to do. To convince people to behave differently, there has to be something in it to motivate them. A great way to discover what will float their boat is to ask them what problems they want to solve.

Who to engage?

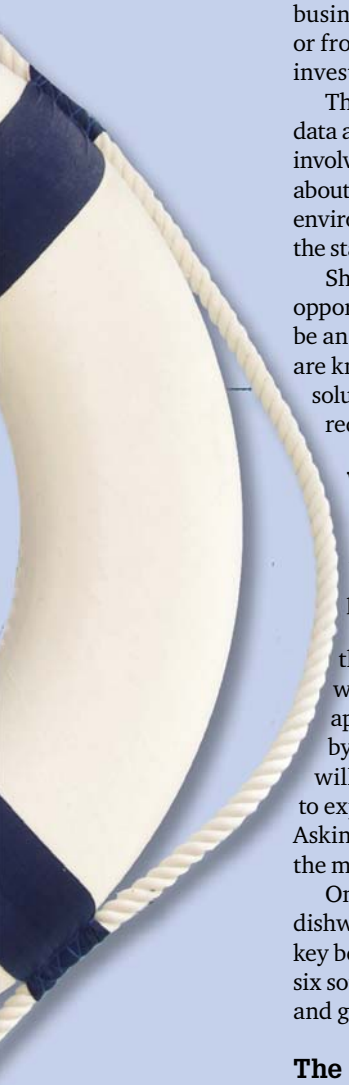
Now you have identified the significant water-related issues, consider who can have an impact on them:

- **In the supply chain** – product development, technical teams, buyers, strategists.
- **Operations** – plant managers, manufacturing staff, facilities management.
- **In use** – innovators, marketing.

Once you pinpointed who to approach, the next step is to identify what it is that you want them to do

The six sources of influence

	Motivation
Individual	What motivates your colleagues may be different from what motivates you – perhaps messages about cleaner mugs will win them over more than focusing solely on water use
Social	Engage people as a group. For example, a kitchen-by-kitchen league table of dishwasher use in the organisation
Structural	Set up an annual water-saving award for staff. For example, offering a watersports outing for the office with lowest water use



differently or better than they do now. For example, will the biggest benefits to the environment and to the business come from small routine behaviour changes, or from relatively rare but big decisions about capital investment in new plant or infrastructure?

These questions can be explored through analysing data and through creative, honest conversations involving the people concerned. When there is clarity about the focus and who will be asked to do what, the environment team can then strike up a conversation with the stakeholders with an open – but not an empty – mind.

Share with them the analysis of the risks and opportunities, and ask them for their views. This will be an iterative and exploratory phase, where ideas are knocked back and forth to identify the win-win solutions that can help further their own goals, while reducing net water use.

We are an ocean

Environment teams can take one of three areas of focus when looking to save water: individual behaviour; innovation in products, services and processes; and engaging the supply chain.

If the greatest impacts can be made through the hundreds of times that colleagues use water at work every day, then the "six sources of influence" approach (see panel, left) is hard to beat. Begin by being clear about the significant actions that will make the biggest differences. You may need to experiment or pilot these before rolling them out. Asking for too many behaviour changes risks diluting the message.

Once you are satisfied that, say, using the office dishwasher rather than handwashing each mug is the key behaviour to change, put in place at least four of the six sources of influence and then monitor the results and give people feedback on how it's going.

The problem solvers

Whether they are engineers or in marketing, there are people in the organisation who are born problem solvers. Find the people who love a challenge. Set out the parameters and engage their imagination and expertise to redesign the product, service or process to do a better job with less water.

For some people, the joy and stimulation of getting their teeth into a technical or creative problem will be enough. But the point of this exercise is not just to engage their brains, it's to change things. So make sure there's a commitment from those participating to do something with the best ideas: it's not a training exercise, it's a planning meeting.

Matthew Neilson, global sustainability manager at Unilever, explains: "We've created a number of interventions to drive innovation in areas that will help us deliver our sustainability ambitions, such as reducing the water needed to use our products.

"Typically we run highly-structured, intensive workshops lasting up to two days. A core team is responsible for running the workshop and they must be focused on the outcome we want to achieve, ensuring we have the right people and the right inputs to create the solutions needed.

"This can involve anyone from any part of the business so long as they can contribute to the idea or its delivery. Involving people who will own the activities going forward is critical. As is prioritising the ideas – so you focus on the most tangible opportunities – and ensuring enough time is dedicated to agreeing the actions, owners and timelines to make it happen."

Upstream thinking

When the biggest risks and opportunities are in the supply chain, it will be harder to engage people. Early conversations with buyers and supply-chain experts in your organisation will focus on whether to switch to alternative suppliers or help existing ones better manage water-related risks.

Assisting current suppliers to use water more wisely involves considering how the costs and benefits of doing so will be shared; there must be something in it for the suppliers too. Ask how they see the situation, and whether they are already addressing it? What help do they need? Can you bring together the wider water system in a catchment-based approach?

This change is likely to be more collaborative and take longer to bring about, as Joseph Maguire, global sustainability manager at Diageo, explains: "Creating the business case for action is vital when engaging your procurement function on addressing water stewardship in the supply chain, which is challenging if the issues you are facing are more medium- to long-term.

"For organisations reliant on agricultural produce identifying suppliers, understanding farming practices (whether the crops rain-fed or irrigated, for example) and evaluating the water risks facing that region are good places to start. However, you will need to go beyond the more immediate, short-term issues to assess and articulate the medium- to long-term view, and bring this to life with your procurement colleagues to ensure it is built into your business strategy."

Ability
Make sure it is clear to every member of staff how to use the dishwasher
Buy generic mugs for the office, so people can have tea even when "their" mug is in the wash
Regular maintenance checks on dishwashers, for example

Penny Walker, MIEMA CEnv, is a facilitator and consultant. Visit penny-walker.co.uk/blog.

Is it good to share?

Seb Beloe asks whether sustainability reports ever provide added value for investors?

When discussing the possibility of creating a sustainability report, the chief executive of a large US conglomerate said: "You want us to produce one of those corporate socialist reports?" This incredulous response may not be a typical reaction, but it does belie a deep-seated misunderstanding about the role and value of sustainability reporting.

Such reporting is a sizeable and growing industry. Corporate Register, which monitors the global output of corporate responsibility, sustainability and environment reports, estimates that, in 2011, there were approximately 6,600 such reports – up from fewer than 1,000 in 2001 and just 40 in 1992. But is all this effort really worth it? Do investors even read these reports?

Starting point

Many environment and social issues are directly relevant to a company's ability to create long-term value for its shareholders. Whether it is increasingly scare resources affecting the price and volatility of commodities, population change driving skills shortages or the rapid evolution in technology that is enabling a more active and influential citizenry, the world is changing and companies need to respond.

Unfortunately, sustainability reports are often seen as an opportunity to spout trite public relations guff. They can also be very lengthy and are not always accurate.

A few years ago a large Italian utility reported carbon dioxide emissions of 122 billion tonnes. If you think that sounds like a lot, you'd be right – it is more than four times the entire planet's production of CO_2 in 2009. Unfortunately, this is not the only or even most egregious example. ABB, a multiple reporting award-winner, was found to have overstated its sulphur oxide emissions by a factor of 1,000 for seven years, during which time it won many of its accolades. Meanwhile, Ford managed to both halve and double its water consumption in the same year (2006). What is perhaps more shocking than the errors themselves is the fact that no one spotted them for a long time.

These examples are now a few years old, and the quality of data and of reporting has, in general, improved markedly. In part, this is due to the growing importance that is attached to a firm's performance on these issues.

Carbon is now priced in a growing number of global markets and is soon to be subject to mandatory reporting in the UK. Investors are slowly integrating critical social and environment issues into their investment models. Bloomberg, for example, now provides data on more than 120 ESG (environmental, social and governance) indicators for about 5,000 publicly-listed companies worldwide.

While there is no doubt that better quality data are more readily available, for many mainstream investors interest remains fleeting and is often limited to one or two critical issues, such as safety in the mining industry and carbon emissions in power generation.

This is particularly true for investors with short-term investment horizons. If an investor intends to hold a firm's shares for a matter of months – the average holding period on the London Stock Exchange is around seven months – then most ESG issues would be considered irrelevant. However, for investors with longer-term investment plans these issues become more important.

Taking the long view

When a shareholding lasts for more than three or four years several factors – including a firm's relationships with its stakeholders (regulators, employees, suppliers and local communities) and its operating expenses (energy, productivity, raw material use) – become critical in understanding whether it will create value. Unfortunately, sustainability reports rarely address ESG issues in this way. This is largely because the audience for these reports is almost never clearly defined. In reality, they are a "catch-all" document designed for everybody and nobody.

That is not to say that no-one is interested, more that the report format is the wrong way to communicate sustainability data. Instead companies should disseminate this information through existing channels that make sense to the end user. For example, they could use marketing and advertising to connect sustainability credentials to customers; compliance submissions with regulators; procurement codes with suppliers; and annual financial reports with investors.

Efforts by the International Integrated Reporting Council to develop a global reporting framework are, at least from an investment perspective, particularly critical. The draft framework (consultation ends on 15 July) defines the key parameters of what corporate reporting, sustainability or otherwise, should look like. It focuses on communicating how organisations create long-term value in terms of financial, human, societal and natural capital.

Seb Beloe, MIEMA CEnv, is a partner at WHEB Asset Management (whebam.com).

Viva la revolución

Policymaking is finally starting to consider the natural environment, says **Mark Everard**

Humans are a learning species. However, the pace at which we learn is decidedly patchy. Technological development over the past couple of centuries demonstrates our ability to assimilate knowledge rapidly, as innovations cascaded from water-driven mills to instantaneous global datasharing, driving unparalleled economic growth and the creation of the market economy itself.

Yet we've been far slower to grasp lessons about the unintended legacies of resource exploitation and technology choices. We have been blind, initially through oversight and latterly as a result of vested interests, to the implications for those ecosystems that constitute the most basic resource supporting our future security and wellbeing.

While the rhetoric of sustainable development – ecology, economy and society as a connected set – has entered political and corporate language, the intimacy of their interdependence has yet to deeply reform business practices and cultural attitudes; short-term market advantage and electoral cycles still dominate.

A new way of thinking

Ecosystems thinking recognises the multiple, often overlooked benefits which the natural environment provides people, or which would compromise wellbeing if degraded. The global pressures of more than seven billion people on dwindling resources make ecosystems thinking ever more urgent. The "ecosystems approach" was a significant milestone, launched by the convention on biological diversity and which, 20 years on, continues slowly to unfold into the mainstream. Ecosystems services comprise a central conceptual framework of the approach.

Political awareness about ecosystems services rose sharply with the publication of the UN's millennium ecosystem assessment (MA). The MA assessed the status of major global habitats, painting an alarming prognosis for human wellbeing. Importantly, it recognised a diversity of values to different stakeholders. The UK's 2011 national ecosystem assessment (NEA) became the world's first national-scale assessment, and has spawned considerable interest as a knowledge base from which to chart a different kind of future.

Global transition

The decline of ecosystems and their implications for our wellbeing are familiar narratives, yet we have never been better equipped to recognise and consider the broader values flowing from the natural environment in policymaking, business strategies and other important decision-making activities.

Some ecosystems-based policy shifts are evident. The natural environment white paper, published in June 2011, recognises that people cannot flourish without nature, and that the economic and social benefits of the natural environment must be properly valued. Other recent UK policy documents – such as the Scottish government's land use strategy and Defra's water white paper – draw upon ecosystems principles and elements of the NEA, acknowledging the profound importance of natural processes for future wellbeing.

The policy shifts seen in the UK are far from being isolated incidents. Government-level interest in applying the NEA in the Indian state of Maharashtra; the incorporation of ecosystems services into the US conservation reserve programme's land-use subsidy system; and the long-standing inclusion of the ecosystems approach into management of the Great Barrier Reef, are just three among many examples of growing global interest in the ecosystems approach.

The real world

Progressive action has also arisen out in the real world, beyond the policy sphere. The British water industry has shown particular leadership. Under the 2005–10 investment cycle, United Utilities implemented SCaMP (sustainable catchment management programme) on upland holdings in the North West of England. The firm recognised that positive management of water-yielding, but historically degraded, upland catchment areas would benefit both biodiversity and customer value

by controlling rising water colour. Diffuse pollution from agriculture is the greatest threat to public water supply abstractions for South West Water (SWW). Its "upstream thinking" programme recycles customer investment into farm advice and improvements with an anticipated 65:1 benefit-to-cost ratio based on projected savings in water treatment. Advice, relationships and associated payments from SWW to farms that affect its core natural asset are brokered through the Westcountry Rivers Trust, a non-governmental organisation (NGO). The trust helps agricultural businesses to save money by working with them to revise practices, benefitting river health, tourism, farmers and the rural economy.

For both SCaMP and upstream thinking, further ecosystems services benefits are achieved for "free", including carbon sequestration; protection of fish stocks and biodiversity; amenity uses; stabilisation of farm incomes; and hydrological improvements.

A wide range of urban initiatives, from "green infrastructure" to "urban forests" and sustainable drainage systems (SuDS), use natural processes to provide low-input, multi-benefit solutions to flooding, air quality, ambient noise and other connected issues.

The revolution continues

As leading players in government, business and NGOs begin to acknowledge the importance of considering whole socio-ecological systems in decision making, we are now at least past "first base". We may even be close to the second phase, with the creation of functioning markets that internalise the value of ecosystems services in at least some areas of public and business interest.

Austerity measures tend to refocus priorities on short-term business stimuli, regardless of costly longer-term consequences. However, with leading business players recognising real competitive advantage through considering the natural environment, ecosystems thinking is likely to weather the present economic storm and continue to shape mainstream practice.

Through initiatives like the ecosystems market taskforce and the natural capital committee, the government is actively working towards building natural capital into real markets and national accounts.

The revolution we are witnessing in attitudes towards ecosystems highlights the urgent need to reintegrate nature into human practices, and its impact on people is not unlike that of the earlier industrial and agricultural revolutions. The ecosystems revolution is a defining feature of our age; either we rise to it, or else we ensure a progressively impoverished future.

Dr Mark Everard is a visiting research fellow at the University of the West of England and an author. His books include *The business of biodiversity*, published by WIT Press.

New CEO joins IEMA

Tim Balcon is the new chief executive at IEMA. He succeeds Jan Chmiel, who left the Institute in March 2013.

Balcon took up his new position on 22 April. He was previously chief executive at the Energy and Utility Skills Group, which includes the National Skills Academy for Power. He is a non-executive member of Ofqual and his résumé also includes: chief executive at GWINTO (the Gas and Water Industries Training Organisation); a non-executive position at Aston University Engineering Academy; and past president of the Institute of Water.

With his focus on professional skills and ability to grow organisations, Balcon was identified as the ideal candidate to take the Institute forward.

Adrian Belton, chair of the IEMA board, and Martin Bigg, chair of the IEMA council, jointly welcomed the appointment: "Tim joins IEMA at an exciting time for the profession, with skilled and competent environment professionals increasingly playing a central role as change agents within organisations, addressing the challenges and opportunities created in moving to a sustainable economy. We look forward to working with him."

Tim Balcon is IEMA's new chief executive

Balcon said: "I am delighted to have joined IEMA as chief executive. It has a fantastic purpose and a very impressive membership base. I am humbled to be given this role and very much looking forward to ensuring that the professional skills of our members are recognised as being a fundamental part of a growing and conscious economy."

An interview with Balcon will feature in the June issue of *the environmentalist*.

Changes to membership fees

After a three-year freeze on membership fees, a below-inflation increase will apply to the renewal of some membership levels from 1 June 2013.

Annual renewal rates for Affiliate, Associate, Full and Fellow membership grades will rise by £10.75 on average. Fees for Student and Graduate renewals are unaffected to ensure that the Institute continues to welcome and retain emerging environmental talent. The table below provides details of the new fees as well as associated changes to the administration fees for the Chartered environmentalist qualification.

Members whose annual renewal payment is due in June will have already received their renewal advice with details of the updated fee.

Full details of the new fees can be found at lexisurl.com/iema15280, together with a list of frequently asked questions that may help with any queries regarding the change in prices.

Membership type	Annual renewal fee
Student	£50
Graduate	£50
Retired/concessionary	£50
Affiliate	£110
Associate	£145
Full	£145
Fellow	£145
Chartered environmentalist (renewals administration fee)	£10 +VAT
Society for the Environment fee for Chartered environmentalist	£37.50 +VAT

Policy update

Preparing for GHG reporting

Ahead of new legislation requiring many large UK firms to report their greenhouse-gas (GHG) emissions, IEMA has developed guidance on preparing for the new Regulations. The main questions to consider are:

- **Who needs to report?** Quoted companies that are UK incorporated and whose equity share capital is officially listed on the main market of the London Stock Exchange; officially listed in a European Economic Area; or admitted to dealing on the New York Stock Exchange or NASDAQ. The rules affect about 1,100 companies.
- **What will they report?** Scope 1 and 2 GHG emissions, covering the six primary Kyoto gases. Firms are also required to report on UK and international emissions and to disclose a GHG intensity ratio.
- **What methodology is required?** The Regulations do not specify a GHG calculation method or standard. However, they do require the transparent disclosure of GHGs – for example, by stating the approach used.
- **Is audit/verification required?** There is no requirement to verify emissions data. However, most companies are expected to seek verification and there are some requirements on the statutory auditor of the financial statement.
- **When will companies need to start reporting?** The rules come into force for company reporting years ending on or after 30 September 2013. So, for firms with reporting years running from January to December, the first reporting year is 1 January 2013 to 31 December 2013.

These points were covered in a webinar on 22 April. For members unable to attend, information on the necessary preparations can be found at lexisurl.com/iema15282.

Nick Blyth is policy and practice lead at IEMA.

Building climate resilience

IEMA publishes new guidance on developing the business case

IEMA members have contributed to new practitioner guidance on building the business case for climate change adaptation. Working with support from Defra and the climate ready team at the Environment Agency (see panel, below, right), the Institute has developed and launched the advice with environment and sustainability professionals in mind.

Here, Nick Blyth, policy and practice lead at IEMA, gives an overview of the project and the content of the new guide.

The business case

Corporate approaches to the environment are changing, with a growing appreciation of business critical "dependencies". The UK climate change risk assessment, which was published by the government in January 2012, states: "The climate is fundamental to almost all aspects of our daily lives: it directly affects our economy, ecosystems, food, water, health, homes, infrastructure, trade and leisure." Further to this, the CBI acknowledges: "Tackling climate change means using energy more efficiently, future-proofing businesses against climate threats and moving business operations towards carbon neutrality."

This is the backdrop underpinning the development of the new IEMA guide.

The project started in January, starting with two member workshops to understand and capture crucial points from practitioners. A webinar followed, presenting and discussing early findings. Finally, a series of telephone interviews explored the emerging issues in more detail. Nearly 300 IEMA members contributed via the workshops, webinar, interviews or as peer reviewers.

Thanks to their involvement a more complete understanding was developed of the key challenges facing environment practitioners, the importance of their role and the necessary ingredients for progressing an effective business case for climate change adaptation.

Direct experience

Informed by IEMA members' experience, the guide aims to help practitioners to understand, scope out and build support for effective business cases. In many instances, the business case will be challenging to develop, especially in determining longer-term impacts and in considering uncertainties. However, progress is being achieved and common learning points have been identified. These learning points include:

- **Understand your business** – an essential starting point.
- **Engage widely across your business** – build awareness, seek interest and share the challenge and use business-relevant language.
- **Don't reinvent the wheel** – use any existing internal decision-making opportunities that are in place.
- **"Piggy back"** – use opportunities presented by other projects and developments in the organisation to build the business case.
- **Use recent and future weather impacts as an early opportunity for business response** – this can also help to build awareness for longer-term climate change adaptation.
- **Alongside risks consider opportunities and dependencies** – these may include any competitive advantage from increased resilience to extreme weather and climate change.
- **Look for "early mover" opportunities and do not underestimate the value of making an early start** – for example, through trial schemes or adaptation linked to wider initiatives.

IEMA has produced a diagram (see right) outlining the steps practitioners work through in building and securing support for climate change adaptation. The new guidance works through these main phases. It also provides information on business relevant climate risks and dependencies; practitioner roles and profiles; business-case principles and learning points; and references to further and forthcoming guidance.

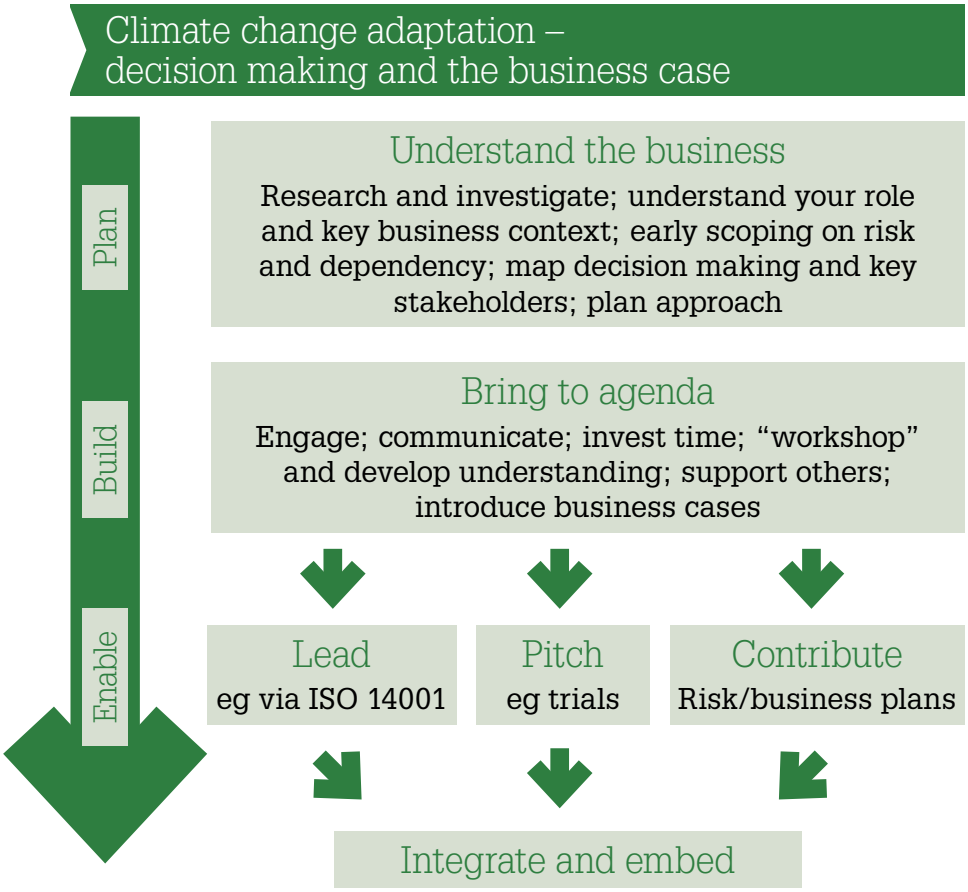
Members taking part in the development of the guide also indicated that climate change adaptation is starting to feature across multiple business processes – from risk registers and organisational management systems, supply chains and procurement, through to sales, service delivery and product design.

Landmark business cases are relatively rare, but incremental progress is being made. This "building" approach is achieving progress, raising awareness and starting to bring adaptation into mainstream business considerations, including the more challenging area of long-term business decisions.

Members are instrumental in helping organisations to address climate change adaptation through existing processes.

Practitioners' views

Jonathan Foot, chief environment officer at EDF Energy, agrees that environment and sustainability officers can make a critical contribution through corporate risk registers. He says: "In many situations a corporate approach to risk management is well established and provides the opportunity for commencing business case considerations at a strategic level, and especially when further supported by a corporate sustainability vision.



"Not all businesses will have an established risk process. However, where these exist they provide a logical opportunity for feeding in new thinking around short-term vulnerabilities to variable weather and longer-term business concerns relative to official climate projections."

The business case can also be directly advanced through an environment management system. Carol Wakelin, environment coordinator for the Queensgate shopping centre Peterborough, said: "We have addressed weather and climate impacts, such as flood risk, through our ISO 14001 certified management system."

In some cases the environment team can achieve progress through trial schemes or strategic reviews. Noble Foods, a supplier of eggs and egg-based products to UK supermarkets, is working to ensure its business is addressing climate change. Company environment officer Deborah Carlin said: "Climate change impacts are being reviewed across farm sites and operations, and a number of practical measures are being tested, from simple water-efficiency measures through to onsite renewable energy generation."

Another important consideration concerns comparative advantage to competitors – that is, viewing action against climate risks as an opportunity for increased resilience and business advantage. One medium-sized company, for example, decided to operate and manage its own delivery logistics to better ensure continuity of service to customers. The company now holds sufficient stock at all times for its valued clients to ensure better continuity of supply. It sees this approach as providing resilience and as an advantage over its competitors, many of which have adopted outsourced just-in-time logistical systems.

An alternative approach to addressing supply-chain concerns is to secure continuity by diversifying suppliers. A further example revealed during the project, addressed such risks by building a localised supply chain – where suppliers held stock and guaranteed delivery.

These real-life examples help clarify how resilience and adaptive action might lead to a business advantage. Dr Paul Pritchard, partner at Sandwalk, agrees: "The idea of recognising adaptation as a sensible business response to an environmental dependency is one that could have considerable potential.

"Such an approach aligns with recent developments in corporate risk management where an organisation's dependency on its supply chain or its IT service provider, for example, is much more prominent. It also allows clustering of concerns around a theme in a way that can be consistent with the many potential impacts of climate change."

Similarly, Toby Robins, sustainable development director at Wiles Greenworld, says: "The threat posed by the increasing frequency of extreme weather events is one of the most significant drivers to build resilience. Effective supply chains and secure logistics are integral to our approach to business sustainability."

IEMA's new guidance is available on the policy hub at iema.net/climate-change-energy. Further information and links on climate change adaptation will be added to the hub during 2013, including information on Defra's forthcoming national adaptation programme.

Climate ready support service

The Environment Agency has a new role in providing advice and support to other organisations on adapting to a changing climate. The service is based on customer needs and feedback, and aims to help organisations build their own capacity to adapt, incorporating climate risk management into their business decision making.

The climate ready support service provides direct support and online information. Through the service, the agency is working with partners to provide tailored tools and guidance, and training to enable organisations to understand and respond to the climate change challenges facing them.

The service has developed guidance to help UK business understand and manage domestic and international climate change risks to their supply chains. The agency is now looking for partners to test its guidance. In addition, the regulator is undertaking work to identify the costs and benefits of adaptation to further assist businesses in building a business case for change.

IEMA approves new list of training providers

Two new organisations have joined IEMA's approved training provider scheme.

The National Union of Students has been approved to deliver courses on auditing environmental management systems and evaluating environmental behaviour change. Both courses are aimed at supporting the continuing professional development (CPD) of its staff across the UK as well as students.

Total Eco Management, meanwhile, has been approved to deliver its two-day sustainability reporting CPD course, which is also certified by the Global Reporting Initiative.

At the same time, the following three existing approved training providers have gained additional approval, extending the range of courses they offer:

- Astutis will also now offer the foundation certificate in environmental management.
- Staffordshire University will now include the IEMA Associate certificate in environmental management as part of its degree in sustainability and environmental management.
- GBC Inspections has been approved to deliver its sustainable procurement CPD course.

Members seeking high-quality, independently-approved training to advance their knowledge and skills should always look for the IEMA stamp of approval and visit lexisurl.com/iema15821. The June issue of *the environmentalist* will contain a full list of available IEMA-approved training courses.

More successful IEMA members

Associate

Bryan Barker, Firth Rixson
James Bell
Stefan Berry, Ramboll
Victoria Brady, Santia Consulting
Ian Brookes, E.ON
Mike Butt, HSS
Mitchell Collins
Michael Daley, Barnsley Premier Leisure
Sinead Egan, Costain
Kit England, Newcastle City Council
Peter Fedorow, ZF Services
Rebecca Flint, Ferrovial Agroman
David Fussell, Bouygues/ Ecovert FM
Mark Gordon, Crown Estate
Peter Gower, Macdermid Autotype
Lauren Hall, GroundSure
Stephanie Kokkinos
Wayne Lawton, National Grid
Cameron McKinnon
Helena Phillips, Santia Consulting
Robert Perry
Gurcharan Singh Phull
Jon Plumb, CITB-ConstructionSkills
Martin Plumb, Arla Foods
Mark Roach, Works Group Royal Engineers
Lindsay Smith, EnviroCentre
Adeniyi Shedowo
Marcus Tatton
Justin Taylor, Works Group Royal Engineers
Stephen Tweddle, Lloyd's Register Quality Assurance

Full and CEnv

Jorge Aragon, InfantesPlan
Fiona Becker, Scottish Power
Ian Davis, Balfour Beatty
David Fairhurst, Scottish Parliament
Martin Quine, Environment Agency
Steven Rayner, Royal Haskoning
Kathrin Schawer
Stephanie Wingate

Full

Guy Beards, Wiltshire College
Karen Beckwith, Magnox
Kimberley Brown, MOD
Andrew Bunn, BAE
Samantha Richardson, Magnox
Rachel Smith, BNP Paribas
Amanda Williams, Bournemouth University

Chartered environmentalist

Sandra Lee, Atkins

Fellow

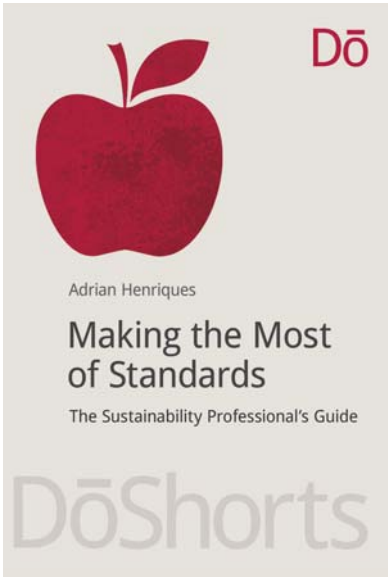
Fiona Draper, EEF
Jayne Rogers, BAE
David Smith, URS

IEMA events

Date	Region	Topic
12 Jun	Yorkshire and Humber	Retrofit 2050
Membership workshops		
4 Jun	Yorkshire and Humber	Full membership (Sheffield)
5 Jun	East of England	Full membership (Ipswich)
2 Jul	North West	Full and CEnv membership (Liverpool)
8 Jul	South East	Full membership (London)
8 Jul	North East	Full and CEnv membership (Newcastle)

Making the most of standards

Adrian Henriques / Dō Sustainability / ebook £30 / ISBN 978-1-9092-9325-0

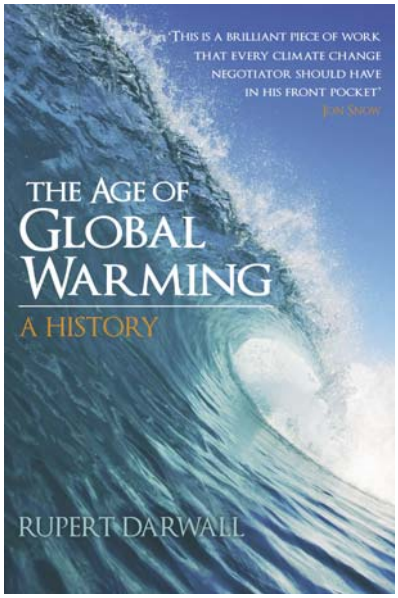


"The world of corporate responsibility standards is large and confusing" states the abstract to this Dō Shorts addition. The 90-minute ebook aims to cut through this morass with insights into the most prominent standards to show how they relate to each other and to offer guidance in choosing and implementing corporate responsibility standards. The array of standards and standards bodies can indeed appear bewildering and this straightforward guide is broadly successful in its aims. It begins with an overview, briefly laying out the argument for and against standards in improving organisational performance. This is followed by a concise description of some of the more prominent standards, characterised as "fundamental", "broad spectrum", "organisational practice" and "special purpose". Each description follows the same format, aiding comparison, and providing information on the background and purpose of each standard; development and governance; and its use in practice. Most are illustrated by a brief case study. The author is an adviser in corporate responsibility and has contributed to the development of standards, notably ISO 26000. In the final sections of the book, he draws on this experience to offer practical insights into choosing and using sustainability standards. He concludes with a cautionary note that standards are not a goal, rather a tool for achieving desired outcomes. Although this ebook doesn't offer detailed analysis, it successfully deconstructs the standards world and is recommended as a concise introduction for both the sustainability professional grappling with diverse and complex issues, and the organisational manager seeking appropriate tools to advance performance and accountability.

Review by Caroline Coyle, sustainability consultant and specialist in tourism and events

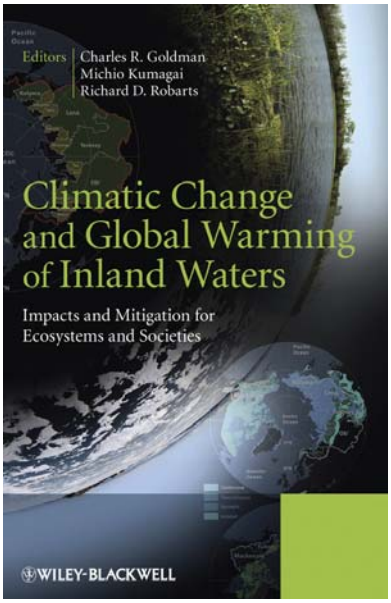
The age of global warming

Rupert Darwall / Quartet Books / Hardback £25 / ISBN 978-0-7043-7299-3



In *The age of global warming*, Rupert Darwall charts the increasing recognition given to climate change by the world's media and political establishments over four centuries, from Francis Bacon to Margaret Thatcher and through to the modern day. He argues that climate change is either an exaggerated effect or one that will take longer to have an impact. Although some salient lessons can, and should, be learned from his book – such as the importance of being open and transparent in business, and the rise of Asia as a valid economic rival to Europe and America – Darwall's argument is long-winded, contradictory and biased. Identifying the audience for this book is also difficult. Its focus on politics and not on the relevant aspects of climate change is alienating to the intelligent layperson and professional alike. Furthermore, the book's broad international outlook fails to consider the local benefits of environment management. The argument is economic and objective, not political and subjective. The consensus among scientists and environment professionals is that investing in decarbonisation produces sustainable, efficient, low-impact and resource-secure nations. In short, Darwall's arguments are now counterproductive and obsolete; it's time the debate moved on.

Review by David Dowson, environmental and sustainability adviser at Skanska



Climate change and global warming in inland waters

Wiley-Blackwell / Hardback £75 / ISBN 978-1-119-96866-5

This book is not for the casual reader; it tackles its subject in great technical depth. Twenty of the 26 chapters address impacts on physical, chemical and biological processes, such as deoxygenation and the invasion of alien species. The difficulty of dissociating eutrophication impacts from those driven by a warming world is flagged throughout, along with the synergies between the two – though not all chapters are as diligent about teasing out the synergistic impacts. Nevertheless, the evidence base for the range, depth and global extent of impacts is compelling. Social impacts, potential management responses and approaches to mitigation are all touched on lightly. Potential solutions examined range from the technocentric (hydrolysis to improve oxygen concentrations, for example) to the ecological (reforestation, wood storage in deep water). For its wealth of detail, the book deserves a far more comprehensive conclusion: the six pages (including references) of the final chapter draw out some threads, but do not critically or adequately inform response options. However, the pressing need to proactively control carbon emissions runs throughout.

Review by Dr Mark Everard, visiting research fellow at University of the West of England

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