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Don't look back in anger

On the night of 2 December 1984, an explosion at the Union Carbide plant in Bhopal, India, released a deadly gas cloud over the city with a population of 1.5 million. More than 500,000 people were exposed to methyl isocyanate, a highly toxic substance, 500 times more poisonous than cyanide. Official figures from the Madhya Pradesh state government put the immediate death toll at about 4,000, though other sources suggest at least double that number died within two weeks. The Indian Council of Medical Research said in 1994 that the toxins released by the explosion had killed more than 25,000. Bhopal remains the world's worst industrial disaster.

Union Carbide, now a wholly owned subsidiary of Dow Chemicals, maintains that the gas leak was caused by an act of sabotage, although former workers and independent observers blame safety cuts and management failures.

The 30th anniversary is being commemorated with the release of a new feature film, *Bhopal: A prayer for rain*. It stars Martin Sheen as the recently deceased Warren Anderson, who was chair and chief executive at Union Carbide at the time. The anniversary and film should act as a reminder of the potential risks to people and the environment from industrial sites, and to underline the need for good and effective regulation, including regular audits and inspection.

It should also make us think about the ongoing impacts. The site remains largely unremediated. Union Carbide says it spent \$2 million cleaning up the site – including starting the construction of a secure landfill to hold the wastes from two onsite solar evaporation ponds, which are blamed for contaminating groundwater – before selling its stake in the Union Carbide India Limited, which operated the Bhopal plant, in 1994. The state government took full control of the site in 1998. The Union Carbide website devoted to the disaster (bhopal.com) concedes: "What additional cleanup work, if any, has been undertaken since that time remains unclear."

The failure to fully remediate the site means that people in the surrounding area continue to suffer. A group of survivors recently ended a hunger strike after Indian government officials confirmed that they would receive additional compensation and pledged to correct the numbers for those killed and the extent of injuries caused by the disaster. The authorities should also commit to the speedy remediation of the whole site, including contaminated groundwater. That would be the most fitting tribute to those who died. We should also ensure such a disaster does not happen again.

On the 30th anniversary of the Bhopal disaster, authorities should commit to the speedy remediation of the site. That would be the most fitting tribute to those who died



Paul Suff, editor

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Short cuts

GIB funds datacentre

The UK Green Investment Bank (GIB) is backing its first project in the financial services sector. A combined cooling and power system will be installed in a London datacentre operated by financial group Citi, together with energy-efficient cooling units. The system will generate 71% of the electricity needed to power the datacentre, cutting running costs and greenhouse-gas emissions by reducing energy consumption by 10%. The project will be paid for out of the energy cost savings achieved without upfront capital expenditure by Citi. GIB is investing £2.6 million in the project, which will be matched by private sector investment. Globally, the IT industry is the second most energy-intensive sector behind aviation; the UK's datacentre industry is estimated to require 3GW of energy. GIB also announced a £200m lending programme for UK community-scale renewable energy projects.

Scant shale gas returns

A sovereign wealth fund is to be set up using revenues from shale gas extraction, the government has announced. The fund will be established when commercial production of shale gas begins and will benefit the whole country, said energy secretary Ed Davey. The announcement came as new research questioned the potential of shale gas to strengthen UK energy security. The UK Energy Research Centre (UKERC) said shale gas is "unlikely to be of sufficient scale to reduce UK import dependence or gas prices". The research found that further gas use will be needed to replace coal and complement the increases in low-carbon energy; however, this should form part of a short-term strategy over the next two decades, said Dr Christophe McGlade, who led the modelling work. The UK's growing dependence on imported gas increasingly exposes it to the volatility of the global market. UKERC suggests that investment in alternative low-carbon energy sources and increased gas storage could mitigate these threats.

Treasury mulls natural capital

Measurement of natural capital could be included in official public sector guidance on appraising costs and benefits of projects and policies.

Speaking to *the environmentalist* at the Natural Capital Initiative conference in November, Defra chief economist Ulrike Hotopp said that meetings with the Treasury on including natural capital in its Green Book, which is currently being updated, had been "very constructive". "We've suggested text to put in the Green Book. They were a bit sceptical at first, but now they've completely taken it on board," she said.

The guidance will help public sector professionals identify the ecosystems to consider when assessing the impacts of projects, and assist them to calculate the cost any loss of the services the ecosystem provides, such as flood mitigation and erosion prevention, she said.

Awareness of ecosystem services across government departments is not yet high. Analysis carried out for Defra by consultancy Efttec found that, although 80% of impact assessments treat economic impacts rigorously, 50% treat environmental impacts with low rigour or not at all. Full quantification and monetary valuation of impacts were scarce, the study found.



Image: REX

A 2012 supplement to the Green Book included ecosystem services, but, although this appears to have increased the number of environmental impacts covered, there was no detailed assessment of 70% of them.

Of the findings, Phil Cryle, a consultant at Efttec, said the main reason for the lack of effective assessment of environment impacts lay with the way professionals mainly use the guidance. "Often they apply it only when a problem arises rather than as a matter of course," he said.

Mark Everard, visiting research fellow at University of the West of England, said: "The updated Green Book will need to make a substantive change in articulating why this matters for a non-green audience and a provide pragmatic tool to help them do it or it won't make any difference."

Green technologies secure jobs

Renewable energy and energy efficiency can create up to 10 times more jobs per unit of electricity generated or saved than fossil fuels, according to a study by the UK Energy Research Centre (UKERC).

It found that electricity from coal and gas creates 0.1-0.2 gross jobs per gigawatt-hour generated. The equivalent numbers of jobs generated by solar electricity is 0.4-1.1, while wind creates 0.05-0.5 and energy efficiency produces 0.3-1.0.

Dr Will Blyth from Oxford Energy Associates, who led the two-year research project, said that in addition to creating job opportunities in the short term, directing investment towards renewables and energy-efficiency projects was key to achieving long-term policy objectives: "When the economy is starting to recover, the key challenge for government policy is to encourage an economically efficient transition towards the country's strategic goals, such as tackling climate change.

Here there is a strong case for investment in renewable technologies and efficiency measures as part of the transformational change to a low-carbon energy system."

Meanwhile, new data from trade association RenewableUK reveals that the number of people working directly in the medium- to large-scale British onshore and offshore wind industry has risen by 8% in the past 12 months, with the sector now supporting 15,400 full-time jobs. The number of indirect jobs, supplying components for example, has also increased by 8% since September 2013. More than 30,400 people are now employed by the sector in the UK.

In a separate announcement, offshore wind company MHI Vestas says it will begin production next year at a site on the Isle of Wight of blades for its 8MW turbines, safeguarding or creating 800 jobs. In 2009, Vestas closed its manufacturing facility on the island, retaining only a research centre.

US and Chinese leaders pledge action on greenhouse gases

In a joint announcement, US president Barack Obama has pledged to cut net US greenhouse-gas (GHG) emissions by 26–28% by 2025 against 2005 levels, and President Xi Jinping of China has targeted 2030 at the latest for Chinese carbon emissions to peak.

The world's two largest economies emit around one-third of global GHG emissions. The White House said the actions announced by the two leaders were aimed at injecting momentum into global climate negotiations, which should culminate in a new climate agreement next year in Paris.

In 2009, the US set a 2020 target to reduce GHG emissions by 17% against 2005 levels. The new US goal would double the annual pace of carbon pollution reduction in the country from 1.2% between 2005 and 2020 to 2.3–2.8% between 2020 and 2025. China, meanwhile, intends to try to meet peak carbon emissions earlier than 2030. It has also pledged to increase the non-fossil fuel share of all energy generation to around 20% by 2030. Achieving that target will require China to deploy up to a 1,000GW of nuclear, wind, solar and other zero-emission generation capacity



over the next 15 years – more than all the coal-fired power plants that currently operate in the country.

The US–China announcement follows an earlier decision by EU leaders to endorse the 2030 climate change package from the European commission. It includes reducing EU emissions by at least 40% by 2030 against 1990 levels.

The US and Chinese pledges came ahead of publication by the Intergovernmental Panel on Climate Change of its latest synthesis report. It reiterates that man-made climate change is a reality but outlines how coordinated action by governments can limit the impacts of unabated change.

Short cuts

When size does matter

The Met Office is to build a £97 million supercomputer to support its weather forecasts and climate predictions. The business department says the computer will be 13 times more powerful than the one used now by the Met Office. It will be able to perform more than 16,000 trillion calculations per second and allow higher resolution models to be created. For example, applying very high-resolution models could better determine the risk and timing of fog over airports. Improved modelling will also allow scientists to assess the specific regional impacts of climate change, such as floods, droughts and heatwaves. Rob Varley, chief executive at the Met Office, said the computer would lead to a “step change” in weather forecasting and climate prediction. “The new supercomputer, together with improved observations, science and modelling, will deliver better forecasts and advice to support UK business, the public and government. It will help to make the UK more resilient to high-impact weather and other environmental risks.” The first phase will be operational in September 2015 and the system will reach full capacity in 2017.

EU air and waste laws at risk

Politicians and campaigners have voiced serious concerns over plans by the European commission to axe two key pieces of environmental legislation.

In a letter to commissioners outlining his plans for a 2015 work programme, commission president Jean-Claude Juncker included packages on air quality and waste on a list of regulations to be withdrawn.

Both measures had been put forward by the previous administration. The waste package was the first piece of legislation to come forward under the circular economy initiative. Proposals include new targets for the recycling and reuse of waste and packaging, phasing out landfill, and reducing food waste generation. The air quality package would extend national emissions ceilings for pollutants such as sulphur dioxide and nitrogen dioxide to 2020, tightening them further by 2030.

MEPs have written to Juncker to highlight the importance of both

packages to the economy, as well as the environment and society. The letter was signed by the coordinators of all the main political groups in the European parliament, except those that the Conservatives and UKIP belong to.

Peter de Pous, policy director at the European Environmental Bureau (EEB), said that the UK had a lot of leverage in the commission after David Cameron's threats to leave the EU if the UK does not get its own way over the budget. “Other states are using this as an excuse to get rid of legislation they don't want,” he added.

Catherine Bearder, MEP and a lead negotiator on the air quality package, said that it was rare for legislation developed by previous commissions to be withdrawn. “The process is taking place behind closed doors, but MEPs are putting maximum pressure on the commission,” she said.

Juncker wants the 2015 work programme to be finalised by 16 December.

Supply chain standard

BSI has unveiled a supply chain information standard for suppliers and buyers at organisations of all sizes. PAS 7000, supply chain risk management – supplier pre-qualification, addresses product, process and behavioural criteria for supplier pre-qualification. BSI says the standard will provide companies with a uniform set of common information requirements, reducing duplication of effort in completing tender forms and aiding procurement by bringing consistency to the supplier base. PAS 7000 does this by creating a model of governance, risk and compliance information for buyers to assist them to pre-qualify suppliers and confirm their intention and ability, and adhere to key compliance requirements. For further information, and to download the standard free, go to bsigroup.com/PAS7000.

In parliament



MEPs mount a fightback

The new European commission took office this month under the helm of Jean-Claude Juncker, a former banker and long-time prime minister of Luxembourg, with a promise to kick-start economic growth. Leaders across Europe have welcomed this. They want to see a more efficient EU, which focuses on the “big issues” rather than the minute details of regulation. But some of Juncker’s proposals have caused consternation, particularly among those of us concerned with protecting the environment and promoting sustainability. Most alarming are mooted proposals to withdraw or revise key pieces of EU environmental legislation, including proposed recycling targets and a new law on air pollution limits (p.5).

Some MEPs are now fighting back, and a number from across the main political groups have written a joint letter to Juncker calling on him to recognise the huge economic benefits of moving towards a cleaner and more resource-efficient economy.

We’ve also emphasised that laws on air quality and environmental protection are not red tape, but are central to people’s quality of life and the future of the planet. The bottom line is that, although there are many areas where the EU could help businesses by simplifying rules and reducing administrative burdens, this cannot come at the expense of our environment.

It was thanks to pressure from the European parliament that Frans Timmermans, the commission vice-president charged with overseeing all EU legislation, had sustainability added to his portfolio instead of focusing just on better regulation. We now want to make sure that this was not an empty commitment. That is why, in the coming months, I and other MEPs will be making it clear that we cannot accept any moves to downgrade the EU’s environmental ambitions.

Catherine Bearder, Liberal Democrat MEP and a member of the European parliament environment committee.

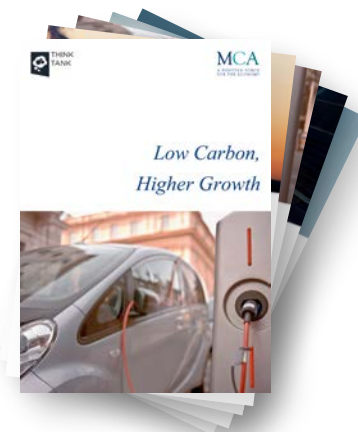
Language key to engagement

The government needs to develop more pragmatic language, action and incentives if businesses are to buy into the low carbon and sustainability agenda, according to the Management Consultancies Association (MCA).

In its new report, *Low carbon, higher growth*, the MCA argues for the government to emphasise more the connection between the low-carbon agenda and prudent resource husbandry and cost reduction. “[The] government should then factor these assumptions into how it uses language in ministerial pronouncements, campaigns or any other references to low carbon and sustainability,” states the report.

It says MCA members contributing to the research for the report were clear that highlighting the self-interest aspects of the low-carbon economy is crucial to building a consensus for low-carbon initiatives. “The success of the low-carbon agenda may depend on showing sceptics that it is at least compatible with, and even an enhancement to, traditional business objectives, such as cost reduction and growth,” it says.

The MCA notes sustainability for businesses is primarily about sensible husbandry of scarce resources and advises



that the language accompanying low-carbon messages should focus on this. The report points out that a retailer would not question such an approach in the area of stock management, but describing it as “green” may obscure the positive aspects of conserving energy, fuel and carbon-intensive raw materials.

Focusing the discussion on carbon and other aspects of sustainability on cost reduction and resource management should ensure the language retains its meaning and help redirect sustainability towards core business functions and personnel, says the MCA, which represents consultancies in the UK.

Firms’ water threats rising

More than two-thirds of the world’s largest companies admit they are at risk from water scarcity or problems with water accessibility or quality, which could threaten their growth.

The 2014 water report from the CDP finds that 68% of businesses report exposure to water risk, which could generate a substantive change in their business, operations or revenue. Some 22% of firms anticipate that issues around water could limit their growth.

The results, based on data from 174 companies in the FTSE Global 500, also reveal that almost half of the 853 reported risks, including closure of operations and decrease in shareholder value, are expected to have an impact now or within three years. The CDP says that water pressures will be most keenly felt in emerging markets, such as Brazil, China, India and Mexico.

“If water scarcity prevails, companies could face constraints to growth. They may

not be able to provide their core products and services, or may lose the ability to expand their business,” said Constantina Bichta, an analyst at investment business Boston Common Asset Management.

The report also shows that water is a rising concern for senior management, with ultimate responsibility for water issues at board level in 62% of firms, up from 58% in 2013. Most companies (90%) are integrating water into their group-wide business strategies and 82% are setting goals and targets to reduce water use, the CDP finds.

Companies are reluctant to inform investors about water issues affecting their businesses, however. Just 42% of the firms requested by investors to divulge information related to their water risks failed to do so. Energy firms had the lowest level of disclosure, despite companies in this sector reporting high levels of exposure to water risk.



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IEA says carbon budget will be exhausted by 2040

Policy and market developments will not be enough to stem the rise in carbon dioxide emissions by 2040, the International Energy Agency (IEA) has warned in its annual analysis of world energy.

The agency has calculated that the share of fossil fuels in primary energy demand will fall to just under 75% by 2040. However, energy-related carbon dioxide emissions will grow by 20% over the next 25 years, leading to an average global temperature rise of 3.6°C, higher than the 2°C cap scientists say is consistent with averting dangerous climate change.

To limit temperature rise to 2°C, the world cannot emit more than around 1,000 gigatonnes of CO₂ from this year, according to the Intergovernmental Panel on Climate Change. However, the IEA calculates that this budget will be used up by 2040. "Since emissions are not going to drop suddenly to zero once this point is reached, it is clear that the 2°C objective requires urgent action to steer the energy system on to a safer path," the

agency's latest report states. "Advances in technology and efficiency give some reasons for optimism, but sustained political efforts will be essential to change energy trends for the better," it concludes.

Changes to policy and markets, and a structural shift in world economies towards services and "lighter" industrial sectors, will limit the rise in the annual demand for energy to 1% after 2025, says the IEA. Over the past two decades, global demand has increased by more than 2% a year.

The agency predicts that energy demand will be "essentially flat" in much of Europe, Japan, Korea and North America. By contrast, demand in other Asian countries, Africa, the Middle East and Latin America will increase.



Image: REX/Imagierechina

The IEA advocates reforming energy subsidies. These totalled \$550 billion for fossil fuels in 2013, which the agency says held back investment in efficiency and renewables. Global renewable energy subsidies totalled \$120 billion in 2013.

Renewable energy will account for almost half of the global increase in total electricity generation to 2040, with its share increasing most in developed countries, reaching 37%. Renewable power generation is also forecast to grow in China, India, Latin America and Africa.

From environmentalisonline.com...

Supplier woes

Inconsistencies in assessing risk across supply chains could have a negative impact on businesses if left unaddressed, according to the Carbon Disclosure Project (CDP). It analysed information disclosures on commodities that cause deforestation, such as timber, from 152 companies, including Asia Pulp and Paper, Cargill and Unilever, and found that nearly 90% of respondents identify opportunities from the sustainable sourcing of key commodities. However, risks are often missed due to poor assessment in the supply chains. For example, 83% of producers identify risks associated with soy, but only 35% of manufacturers spot the same risk, said the CDP. "Leading companies are those that bring their supply chains with them," said CDP chief executive officer Paul Simpson. Demand for corporate disclosure through CDP's forest programme has increased by 30% since 2013, showing investor-led pressure on supply chain security.

environmentalisonline.com/forestry

Runway risks

Expanding either Heathrow or Gatwick airports would damage air quality and biodiversity, as well as increase carbon emissions and noise pollution, according to independent government advisers. The Airports Commission considered location and timescale in its consultation, and found that two separate proposals to expand Heathrow – from Heathrow Airport and Heathrow Hub – and one from the current operator of Gatwick, would have negative impacts on a range of environmental factors. Some impacts may never be entirely mitigated, though they would not exceed domestic or international regulations, except in the case of air quality, the commission concluded. For example, under both plans for Heathrow an additional 100,000 people would be adversely affected by aircraft noise, substantially more than by the plan for Gatwick, although up to three times more people would be affected by noise pollution in West Sussex than now.

environmentalisonline.com/airports

Reuse centre

A remanufacturing research centre and material brokerage service will be established in Scotland to help manufacturers harness value from used materials and components, environment secretary Richard Lochhead has announced. The Scottish Funding Council and Zero Waste Scotland (ZWS) will provide £1.3 million over three years to support the centre. Scottish businesses have also pledged more than £800,000 or "in-kind" support for potential research projects. Strathclyde and Heriot Watt universities will host the research centre. The new Scottish materials brokerage service, meanwhile, was set up to help local authorities get a better deal for collected recycled materials. The brokerage service will provide certainty of supply for investors and of demand for councils, said Lochhead. "By focusing on remanufacture and reuse, Scotland can develop a circular economy, which makes better use of resources," said Iain Gulland, ZWS director.

environmentalisonline.com/reuse

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Hydrogen fuels Honda station

The UK's first commercial scale solar-powered hydrogen production and refuelling station was launched by a consortium of businesses including Honda and BOC last month.

Honda has had a hydrogen refuelling facility at its factory outside Swindon since 2011, but it can now produce commercial volumes of hydrogen produced by solar power. The plant will mainly refuel the fork-lift trucks operating at the Honda plant and vehicles run by Swindon borough council and Commercial Group, which have been converted to run on hydrogen and biodiesel fuel.

The project is a pilot to discover the cost of owning and using such a facility, technical problems and vehicle efficiency. It was funded by Innovate UK, formerly known as the Technology Strategy Board.

Kate Warren, who works on hydrogen and supply chains at the Office for Low Emission Vehicles, said that the government wants to be at the forefront of ultra-low emission vehicles (Ulevs), such



as those powered by hydrogen. Between 2015 and 2020 it is providing £500 million to support development and use of Ulevs.

Honda and Toyota are launching fuel cell car models in the UK in the next two years, while three Hyundai fuel cell cars were delivered to the UK in October as part of a project to create a hydrogen vehicle network in the South East.

Also in October, Sainsbury's announced that it would build the first supermarket forecourt hydrogen dispenser in the UK at a store in London by the end of the year.

Scottish compliance edges up

Almost 90% of operators regulated by the Scottish Environment Protection Agency (Sepa) under its compliance assessment scheme (CSA) achieved an excellent or good rating in 2013.

Sepa reports that, of the 3,991 licensed activities assessed as part of the scheme last year, 2,951 (74%) were rated as excellent, 592 (15%) as good and 66 (2%) as broadly compliant, which means they reached a satisfactory level of performance. The overall proportion of sites achieving one of three compliant ratings in 2013 was 90.4%, a slight improvement on the 89% recorded in 2012.

A total of 116 (3%) sites, meanwhile, received an at risk classification, while 218 (5%) were ranked as very poor.

One ranked as very poor in 2013 was the Dargavel energy-from-waste plant in Dumfries. The agency revoked the site's pollution prevention and control permit in September last year, and the operators, Scotgen, subsequently decided not to appeal against the decision. The site has been non-operational since a fire in July 2013.

Another site ranked as very poor was the waste transfer station at Armadale in West Lothian operated by Doonin Plant. In

2012, the haulage and recycling company was ordered to pay a record £200,000 penalty for illegally dumping waste.

Last year was the first time Sepa carried out assessments under the CSA on water resource activities regulated under the Controlled Activities Regulations. These range from large-scale public water supply or industrial abstractions to smaller scale irrigation schemes. Of the 1,187 water resource sites assessed, 73% were considered compliant in 2013. The main cause of non-compliance for water resource sites was the failure to supply data returns required by the licence.

Sepa has also reported that greenhouse-gas emissions from regulated sites fell by 8% in 2013 compared with 2012. For example, carbon dioxide emissions last year from the 1,335 sites providing data to the Scottish pollutant release inventory totalled 21.1 million tonnes, down from 22.9 million tonnes in 2012.

Martin Marsden, Sepa's head of environmental quality, said the reduction in GHG emissions last year was largely due to the closure of Cockenzie power station in East Lothian, which ceased operation in March 2013 after more than 45 years.

Business plans

Asda will employ the Enacto™ 9.3 energy monitoring management platform from **Elster Energy ICT** to manage more than 10,000 meters at more than 660 sites in the UK over the next five years. The retailer has been working with Elster since 2005 and has achieved a 30% reduction in energy consumption. The retailer believes the new software will enable it to match the 2020 energy reduction target of its US parent, Walmart, which is to cut consumption by 20% against 2010 levels.

Elsewhere on the high street, the **Co-operative** has installed a biomass heating system as part of a refit of its Fort William store. It is the first Co-op outlet to switch to biomass and will almost halve its annual energy bill and save 90 tonnes of carbon a year. The system attracts a payment of £13,000 a year through from the government's Renewable Heat Incentive, so recouping the capital cost in less than five years.

Marks & Spencer, meanwhile, is installing more than 24,000 solar photovoltaic panels on the roof of its distribution centre at Castle Donnington. When completed next year it will be the UK's largest single roof-mounted solar array, generating around 5,000MWh of electricity annually and cutting carbon emissions by more than 48,000 tonnes over the next two years.

The **InterContinental Hotels Group** (IHG) is to roll out its green engage system across more than 4,700 sites worldwide from 1 January. The online tool, featured in *the environmentalist* in June 2013, contains more than 200 "green" solutions to reduce hotels' environmental impact. So far, the system has been used in IHG's managed hotels, and, in 2013, it helped reduce energy costs by \$73 million.

Reckitt Benckiser has announced that all its European and US operations have achieved zero manufacturing waste to landfill. The company's sustainability strategy, "betterbusiness", includes 2020 targets to send zero waste to landfill and reduce waste per unit of production by 10%. Reckitt Benckiser says that more than 60% of its factories worldwide have achieved zero manufacturing waste to landfill, and it has reduced waste per unit by 7% globally since 2013.



ADAM INTRODUCED REUSE AND RECYCLING INITIATIVES WHICH DELIVERED SAVINGS OF £100,000 TO THE BUSINESS



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It's also worth remembering that in a competitive and fast moving industry like construction, a good reputation is priceless.

In court

Auto firms pay \$100 million for breaching Clean Air Act

Hyundai and Kia are to pay a \$100 million civil penalty to US authorities for violating the Clean Air Act. This is the largest penalty imposed under the Act.

The companies reached the settlement with the Environmental Protection Agency and the US justice department for selling more than one million vehicles in the US that collectively will emit more greenhouse gases (GHG) than permitted under their certificates of conformance (COC).

The certificates, which are issued by the agency, ensure that vehicles introduced into the US satisfy appropriate benchmarks, in this case the tailpipe GHG emission standards. Under the COC programme, manufacturers apply to the agency for a certificate and must demonstrate in their applications that representative test vehicles meet the relevant standards. A vehicle's road load force is one of the specifications manufacturers must describe in a COC application. An investigation by the agency revealed that the test protocol Hyundai and Kia used to measure the road load force have included numerous elements that, once aggregated, generated inaccurately low road load forces. As a result, some Hyundai and Kia vehicles were alleged to have a higher road load force than was described in their application, meaning they would use more fuel and emit more GHGs.

The agency says that the two South Korean firms sold 1,181,776 new motor vehicles in 2012 and 2013 – four Hyundai models (Accent, Elantra, Santa Fe and Veloster) and two Kia models (Rio and Soul) – that violated the Clean Air Act.

Tailpipe GHG emissions are the average across a manufacturer's whole fleet of vehicles, expressed in terms of grammes of GHGs per mile. Auto companies can comply with the standards by "averaging, banking and trading" GHG emission credits, which represent surplus reductions in emissions manufacturers have achieved beyond those required. In this case, the agency says Hyundai and Kia understated the GHG emissions of their fleets by approximately 4.75 million tonnes.

The two companies have been forced to forfeit emission credits to the equivalent amount. The agency estimates the forfeited credits to be worth in excess of \$200 million. As part of the settlement, Hyundai and Kia have agreed measures to prevent future violations and to audit their fleets to ensure vehicles currently on sale conform to their certification. The agency says these corrective measures, which will apply to models placed on the US market in 2017, and audit testing will cost about \$50 million.

Solar judicial review fails

Four solar energy companies have failed in their legal challenge to Decc's decision to end subsidies for large solar farms two years ahead of schedule. The judicial review of the energy department's plans to end payments under the Renewables Obligation (RO) scheme in March 2015 for solar farms larger than 5MW, rather than in 2017 when the scheme ceases to operate, was heard by the High Court. The companies – Lark Energy, Orta, Solarcentury and TGC – argued that Decc had acted unlawfully by deciding to retrospectively pull the plug on a scheme designed to provide the industry with confidence and certainty. The judge agreed that the action had a retrospective impact, but ruled that it was fair for Decc to set a qualification deadline identical to the very first day of the consultation period.

Discharge breach costs £33,621

Polluting a brook with clay material from its Knutton Quarry site at Newcastle-under-Lyme has cost Ibstock Bricks more than £33,000. The company, which pleaded guilty to breaching the site's environmental discharge consent, was fined £27,000 and ordered to pay costs of £6,501.25 and a £120 victim surcharge. Stafford Magistrates' Court was told that the incident occurred on 15 August 2013 when the discharge equipment at the site failed. Tests revealed that there were 10,600mg of suspended solids per litre of water along the 3.5km polluted stretch of watercourse, when the permitted level is 50mg. The Environment Agency revealed that there was no failsafe device installed to ensure that polluting material was not pumped into the brook after an equipment failure. This had now been rectified.

Case law

Non-green belt factors in green belt developments

In *Redhill Aerodrome Ltd v Secretary of state for communities and local government* [2014] EWCA 1386 (Civ), the Court of Appeal had to consider the meaning of the words "any other harm" in the very special circumstances test in the National planning policy framework (NPPF). Did they mean "any other harm to the green belt", or did the meaning also include any other harm relevant for planning purposes.

In this case, the planning inspector dismissed Redhill's appeal against the refusal to grant planning permission for a new runway, concluding that the overall weight against the proposal was very strong; the positive considerations did not clearly outweigh the potential harm to the green belt; and very special circumstances to justify the development did not exist. The High Court accepted that the inspector had erred in taking non-green belt harm into account when deciding whether the other considerations clearly outweighed the potential harm to the green belt.
















At appeal, the judges said the words "any other harm" in the very special circumstances test in the NPPF continue to have the wider meaning of any other harm – that is, they included any other harm relevant for planning purposes, such as harm to landscape character, detrimental to visual impact, noise disturbance or adverse traffic impact. Also, the NPPF did not derogate from the statutory duty to have regard to any other material considerations when determining planning applications. The local planning authority had to consider all material considerations – those pointing against and in favour of granting permission.

Jen Hawkins

Lexis®PSL

New regulations



In force	Subject	Details
26 Sept 2014 	Emissions	European commission decision 2014/687/EU establishes best available techniques (BATs) for permitted installations in the pulp, paper and board sector. Competent authorities in member states are required to update permit conditions in line with the decision by 26 September 2018. Derogations from the BATs will only be granted where costs associated with the revised emissions limits disproportionately outweigh the environmental benefits. lexisurl.com/iema40547
1 Oct 2014  	Planning	The Infrastructure Planning (Applications: Prescribed Forms and Procedure) (Amendment) Regulations 2014 remove the requirement to submit plans at scales no smaller than 1:2500 in support of applications for offshore projects. The 1:2500 scale continues to apply to applications that extend partially outside the UK marine area. lexisurl.com/iema31960
1 Oct 2014  	Waste	The Environmental Permitting (England and Wales) (Amendment) Regulations 2014 will require that material recovery facilities receiving mixed waste from households (or a similar origin) monitor the quality of input and output material streams. lexisurl.com/iema17523
1 Oct 2014  	Natural environment	The Plant Health (England) (Amendment) (No.2) Order 2014 makes a number of revisions to the plant health regime, including establishing protection zones for four pests. Additional control measures are also established against citrus blackspot. The Plant Health (Wales) (Amendment) (No. 3) Order 2014 establishes a protection zone in Wales against the oak processionary moth (<i>Thaumetopoea processionea</i>). Additional control measures are also established against citrus blackspot. lexisurl.com/iema31964 ; lexisurl.com/iema32566
1 Oct 2014  	Natural environment	The Plant Health (Forestry) (Amendment) (England and Scotland) Order 2014 amends the 2005 Order to create a protection zone for four pests: chestnut gall wasp, oak processionary moth, sweet chestnut blight and plane wilt. Bronze birch borer is added as a further pest with additional mandatory controls. Requirements on wood packaging imported from outside the EU are extended to cover materials not in use, including dunnage. Heat treatment requirements for non-EU conifer wood and bark are extended. lexisurl.com/iema32567
8 Oct 2014 	Energy	European commission implementing decision 2014/667/EU recognises the universal feed assurance scheme, which demonstrates the sustainability of biofuels. This approval is valid for five years until 8 October 2019. lexisurl.com/iema32564
14 Oct 2014 (1 Oct 2015)   	Energy	The Power Purchase Agreement Scheme Regulations 2014 support the introduction of contracts for difference by establishing an offtaker of last resort (OLR) scheme. The OLR delivers backstop to provide a guaranteed route for generated power should it be unable to find an offtaker willing to enter into a power purchase agreement on the open market. lexisurl.com/iema32563
20 Oct 2014 	Waste	The Single Use Carrier Bags Charge (Scotland) Regulations 2014 enable Scottish ministers to impose charges on the supply of single-use carrier bags. Suppliers of these bags must charge at least 5p for each bag. lexisurl.com/iema24755
1 Nov 2014 	Planning	The Town and Country Planning (Fees for Applications and Deemed Applications) (Scotland) Amendment Regulations 2014 increase all fees payable for applications and deemed applications by approximately 5%. lexisurl.com/iema28685

Latest consultations



8 Jan 2015

Energy efficiency



The Welsh government is seeking views on improving energy efficiency in Wales. It wants evidence to show how energy efficiency will contribute to: reducing greenhouse-gas emissions and helping to deliver Wales' climate change strategy; reducing fuel poverty; creating jobs and business opportunities; improving the energy performance of buildings in Wales; raising the overall quality of the building stock and reducing energy costs; the regeneration of local communities through improvement in the fabric of buildings, and the creation of jobs; and the delivery of its energy policy, complementing the aspirations for a low-carbon Wales. lexisurl.com/iema40576

21 Jan 2015

Building regulation



Changes to guidance in the domestic and non-domestic *Building standards technical handbooks 2015* have been published for consultation by the Scottish government. The plans include changes to section three, which covers the environment, and section seven, which focuses on carbon emissions. lexisurl.com/iema40597

22 Jan 2015

Radioactive waste



After a review of measures to deal with higher activity radioactive waste (HAW), the Welsh government has set out potential new disposal options. The government says it wants to ensure its policy on disposal of spent fuel is consistent with its support for a new nuclear power station at Wylfa Newydd and compatibility with the EU legislation, which considers storage an interim measure rather than a permanent solution. It also believes the permanent disposal of spent fuel will remove the need for future generations to be involved in its management. lexisurl.com/iema40584

23 Jan 2015

Climate change agreements



Decc has published its proposals for the planned 2016 review of targets under climate change agreements (CCAs). The review is part of the government's plans to simplify CCAs and to ensure that targets remain challenging and achievable. Decc is proposing a four-stage review: sift and select – an initial review of all sectors in the scheme, to identify areas where changes may have occurred since targets were agreed in 2012; a detailed review of selected

sectors to further quantify changes in realistic potential for energy and carbon savings; agreeing new sector-level commitments with associations where changes in realistic potential have been identified; and more widespread use of revised sector commitments. Stakeholders are invited to comment on the proposed approach, methodology and scope. lexisurl.com/iema40571

31 Jan 2015

River management



The Environment Agency is consulting on draft flood risk management plans for each of the 10 river basin districts in England. It has also developed draft flood risk management plans jointly with Natural Resources Wales (NRW) for the Dee and Severn river basin districts. The proposals set out how the agency, NRW, local councils, drainage authorities, highway managers and water companies will work together with communities to manage flood risk. The agency says deciding how best to work, what to invest in and where, how fast action should be taken and who should pay is a complex process. Final plans for investment and action, from 2016 to 2021, are due to be published in December 2015. lexisurl.com/iema40599

New guidance

Biodiversity duty

Under the Natural Environment and Rural Communities Act 2006, public bodies have a duty to conserve biodiversity. They should, for example, consider how wildlife or land may be affected in all the decisions they make. This includes: when making planning decisions; developing new infrastructure, such as roads, buildings or flood defences; deciding how to deal with waste and pollution; and when deciding on energy and water use. Defra has published guidance on the duty (lexisurl.com/iema40604). It includes information on how public bodies can demonstrate regard for biodiversity and how they can measure their commitment.

MCERTs competency

The Environment Agency has updated its guidance on the personnel competency standard for manual stack emission monitoring as part of its monitoring certification scheme, or MCERTs. The scheme covers: the standards of performance that monitoring equipment must meet; the level that monitoring staff must be qualified to; and accreditation of laboratories and inspecting sites. Version nine (lexisurl.com/iema40614) is split into three main parts: the personnel competency standard, from trainee to team leader; personnel certification, including conformance assessment and code of conduct; and recertification of personnel.

Enhanced capital allowances

The Carbon Trust has published new guidance (lexisurl.com/iema40607) on the enhanced capital allowance (ECA) scheme for energy-saving technologies. The ECA encourages businesses to invest in energy-saving plant or machinery on the Energy Technology List (ETL), which is managed by the trust. The ETL has two parts: the Energy Technology Criteria List (ETCL), which sets out the energy-saving performance criteria that ECA qualifying equipment must meet; and the Energy Technology Product List (ETPL), which is a register of products that have been assessed as compliant. The guide provides details on what is and is not on the ETL, as well as how to complete a tax return and how organisations can save the most energy.



Laying down the law

Searching for the real meaning

Stephen Tromans looks at two recent court decisions and whether they provide clarification of the meaning of the word “likely” in environmental impact assessments



The system of environmental impact assessment (EIA) depends on judgments as to whether significant environmental effects are likely. Perhaps surprisingly, until recently no case has given much thought as to what the word “likely” means in this context. Increasingly, it seems, a very cautious approach is being taken in screening and in decisions as to the effects that need to be covered in environmental statements – no doubt for defensive reasons. Now, two cases dealing with that topic have come along together.

The Habitats Directive

The first is the decision of the Court of Appeal in *R (An Taisce – the National Trust for Ireland) v Secretary of state for energy and climate change* [2014] EWCA Civ 1111. That was an unsuccessful challenge to an order granting development consent for the new nuclear reactor at Hinkley Point C in Somerset. It was argued that the UK government should have carried out transboundary consultation with Ireland, on the basis that the project could have likely significant effects there. The government’s view was that the probability of such impacts was too low to justify this.

The court noted that the Court of Justice of the European Union (ECJ) had not ruled on the issue, nor were there any binding domestic authorities. It rejected, importantly, an attempt to draw a parallel with the word “likely” in article 6(3) of the Habitats Directive, where the ECJ has given it an extensive, precautionary meaning, whereby a risk exists if it cannot be excluded on the basis of objective information. This approach is not appropriate to the EIA Directive because the two measures have different purposes.

The habitats regime is designed to achieve a very high level of protection for special areas of conservation, whereas the EIA Directive has a very broad scope. Carrying across the habitats meaning would, Lord Justice Sullivan said, mean that more projects would be subject to EIA and environmental statements, which would become even lengthier than they are now. Not a good outcome.

Cumulative assessment

In the second case, *Commercial Estates Group Ltd v Secretary of state for communities and local government* [2014] EWHC 3089, a developer sought to challenge its opponent’s planning permission on the basis that there had been a defective screening process. The claimant argued that there should have been cumulative assessment of the development, with further development of land allocated as suitable in the plan for development over the next 10 years.

EU guidance on cumulative effects refers to the inclusion of past, present or reasonably foreseeable actions. The claimant said this should mean “a real risk which would occur to the mind of a reasonable man ... and which he would not brush aside as far-fetched”, relying on what is “reasonably foreseeable” in the tort of negligence. The judge rejected that approach. While not attempting to formulate the test, the judge was confident the threshold was significantly higher than that. Ultimately it was a matter for the judgment of the decision maker, in this case the secretary of state.

European decision?

Both decisions show the general reluctance of the courts to extend the reach of EIA and to interfere with decisions as to what are, in essence, matters of judgment by the decision maker. It may be that we will have European authority on these points at some stage and it will be interesting to compare how the European judges approach it.

The habitats regime

Article 6 of the Habitats Directive relates to special areas of conservation. Article 6(3) states that: “Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives ... The competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.”

Guidance (lexisurl.com/iema43864) from Defra on decision making under the habitats legislation states that plans or projects must be assessed to see whether they may have a “likely significant effect” on a European site (protected land and marine habitats), but says it is left to the judgment of the competent authority to decide what is (or is not) “significant” for the site concerned. There is no formal requirement for a screening stage in habitats legislation, and no set rules on how long it should take or how detailed it should be. Defra says it is for the competent authority to decide how screening should be applied in each case, depending on the likelihood of significant effects on a European site.

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

After writing this column for more than 20 years, I have decided to call it a day. I wrote the first one in 1990, in what was then the magazine of the Institute for Environmental Assessment. I am pleased to say I have a clean record of never having missed an issue or a deadline. I have enjoyed writing for you as readers, and I hope you have enjoyed reading the column and found at least some of it useful, perhaps even entertaining. Very best wishes to you all, particularly to any readers from my early days as a columnist who are still going.

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Opportunity knocks?

Paul Suff reports on an event to discuss the forthcoming energy savings opportunity scheme

By this time next year, around 7,000 businesses in the UK should have completed an energy audit, and notified the Environment Agency that the assessment is completed and approved by a board-level director. Alternatively, their total energy consumption will be covered by a certified ISO energy management system. These are the ways companies can demonstrate compliance with the new energy savings opportunity scheme (ESOS). It transposes article 8 of the EU Energy Efficiency Directive (2012/27/EU) into domestic regulation.

Under the scheme, which is mandatory, large companies – with at least 250 employees or an annual turnover of more than €50 million and a balance sheet exceeding €43 million – will have to complete an assessment of their energy use every four years. The first ESOS audit must be completed by 5 December 2015.

According to Decc, firms that implement just 6% of the measures identified by the assessments will save a cumulative £1.9 billion between 2015 and 2030. If uptake is greater the savings could be as high as £3 billion. However, ESOS does not require participants to implement any of the energy efficiency recommendations identified by the assessment. So will the scheme lead to greater energy savings among big business or will the assessments be a waste of human energy? What will ESOS mean for firms that are already committed to securing efficiencies? Is there sufficient capability to identify potential savings or will ESOS fail because of a lack of good energy auditors? What can the profession do to ensure ESOS is a success?

To answer these questions, *the environmentalist* and WSP hosted a roundtable event on ESOS in October at Media City in Manchester.

Positive move?

David Symons, director at WSP, chairs the discussion and his first question to the panel is to ask whether the scheme will have a positive impact on their firms and other businesses. He points out that WSP, as well as providing advice to scheme participants, will also have to comply with ESOS. He says it is unlikely to make much difference to how the company operates, though, as it is already aims to be as energy efficient as possible.

“I see ESOS helping to unlock some of the efficiency potential in organisations that have been slow on the uptake.”



Colin Robertson

Although Yorkshire Water has done much over the past few years to improve its energy efficiency, transformation and implementation manager **Sam Hughes** believes the scheme may provide an opportunity to do more. “It sets a framework around energy efficiency and provides practitioners with an opportunity to raise it at board and investor level,” he says. “We’ve got more than 3,000 sites. Some of these are big energy users, while others consume relatively little. We’ve invested a lot in energy efficiency, particularly at sites where consumption is highest. ESOS has provided the push to seek extra resources so we can make an investment case for smaller sites.”

Colin Robertson, group head of sustainability at engineering, IT and facilities management business NG Bailey, also considers the creation of ESOS to be a positive move. “I see it as helping to unlock some of the efficiency potential in organisations that have been slow on the uptake. It could be a boon for energy managers in organisations that are struggling to get traction for efficiency initiatives,” he says.

Stephen Barker, head of energy efficiency and environmental care at Siemens UK, is also broadly supportive of ESOS. However, he feels that the lack of a requirement to implement the findings of an assessment and the weak auditor requirements mean the scheme is a missed opportunity. “It will provide a nudge to get moving for those companies that have been considering doing something. But I fear they will be the minority,” he says. “Nonetheless, we should applaud the requirement for energy-saving measures to be defined in terms of lifecycle costs and not just simple payback, and also for the fact that senior directors are required to sign off the ESOS report.”

The ESOS panel

David Symons
Director, WSP

Sam Hughes
Transformation and implementation manager, Yorkshire Water

Colin Robertson
Group sustainability manager, NG Bailey

Andrew Dutton
Head of environment, Liverpool John Lennon airport

Stephen Barker
Head of energy efficiency and environmental care, Siemens UK

Sue Manning
Health, safety and environment, Cummins UK (via teleconferencing)

Simon Clouston
Technical director, WSP

TALKING POINTS



Stephen Barker

"We should applaud the requirement for energy saving measures to be defined in terms of lifecycle costs and not just simple payback, and also for the fact that senior directors are required to sign off the ESOS report."



Sam Hughes

"We've invested a lot in energy efficiency, particularly at sites where consumption is highest. ESOS has provided the push to seek extra resources, so we can make an investment case for smaller sites."

Sue Manning, from the health, safety and environment team at Cummins UK, believes that the eventual success of ESOS will depend on the organisation: "I wonder whether it will add any value for those businesses that are already actively engaged in energy efficiency activities?"

Andrew Dutton, head of environment at Liverpool John Lennon airport, agrees. "I think very few companies already on an energy efficiency path will get anything extra out of ESOS," he says. "For those firms, the ESOS will mean spending money to get someone to confirm what they are already doing. Say a final assessment costs £25,000. That's the cost of installing 750 LEDs ... which has more environmental benefit?" **Dutton** is also not convinced that legislation will drive companies not already attracted by energy efficiency to embrace it. "If a company's board isn't already aware of the potential for energy efficiency to save money, I do not think ESOS is the tool to change that. Indeed, the legislation might act as a barrier, as it entails a cost [for an assessor]."

"I'd agree with that for some organisations," says **Simon Clouston**, technical director at WSP. "I think there is definitely an argument that companies with a well developed energy efficiency programme will gain little from ESOS." He does, however, see others, particularly firms owning a lot of properties, potentially benefiting. "It might raise the level of understanding of energy across the estate of an organisation with an extensive property portfolio. I think some companies will look at the scheme and say: 'We've got to do it, so we might as well make sure it adds some value'," he says.

Tick-box exercise?

The majority of the panel considers the likelihood is high that most companies will regard ESOS as a tick-box compliance exercise. "Once it is subject to legislation, there is always the risk that energy efficiency becomes a compliance matter," says **Dutton**. "Then it's more a case of what does the legislation say and what do we need to do to comply? Rather than asking what's the opportunity and how far can we go to 'push the envelope' to improve business and environmental performance."

"I tend to agree," says **Barker**. He estimates that just 5% of organisations in the UK could be classed as being energy efficiency exemplars. "Anything that increases that number should be welcomed," he says.

In his opinion, the 80/20 Pareto principle is likely to apply as companies prepare for the first ESOS deadline. "I think 80% of companies will regard ESOS as a compliance exercise, while 20% will see the link between good energy practice and business benefits. That's the problem with this and similar legislation: it should be seen as an opportunity to improve profitability, but most organisations will not focus on that; they will only regard it as something they need to comply with."

Barker also highlights the risk that some firms will automatically place ESOS with the compliance department without realising that the scheme is geared towards saving money. "We've been talking for some time to a company, which spends about £10 million a year on energy, about how to improve efficiency," he says. "It was only by accident that we discovered that responsibility for ESOS had been handed to the compliance team, which was completely separate from the team looking at energy efficiency."

Your guides to ESOS

The energy and climate change department, Decc, published its guide to the energy savings opportunity scheme (ESOS) in September. It covers ESOS qualification, steps to complete an ESOS assessment and the different routes to compliance. It is available at lexisurl.com/iema38373. Our handy ESOS guide in an infographic, provided by WSP, can be found on pp.20–21.

“There is definitely the potential for ESOS to be seen just as more ‘red tape’ and therefore a compliance issue,” concedes **Robertson**. **Dutton** believes the “simplification” of the carbon reduction commitment (CRC) scheme, under which changed it from promoting good carbon management practice by transferring levies from poor to good performers to being a carbon tax, could undermine ESOS and encourage the view that compliance is preferable to engaging actively with efficiency. “Practitioners in many businesses felt sold down the river by the CRC, so some will just make an allowance in the budget to comply with ESOS and leave it at that,” he warns.

Hughes acknowledges that companies can comply fairly easily by ticking a few boxes, but believes that others will apply the legislation in the spirit in which it is intended and seek to derive some benefit. **Clouston** thinks the impact of ESOS will vary across three distinct groups of companies. “There’s the group of firms that is well on top of energy efficiency, so ESOS will merely be a compliance exercise because it does not add any additional value. At the other end of the spectrum, there are the companies that are not engaged with the process and ESOS will not alter that. They will also, for different reasons and in a different way, treat the scheme as a compliance issue. Then there’s the group in the middle. They will start to engage with energy efficiency in a way that they haven’t really done before. ESOS will spur activity.”

The other main fear among the panel is that consultants will benefit most from ESOS without it being of any lasting value for scheme participants. “Companies should carefully evaluate the need and benefits before engaging a consultant,” warns **Manning**.

WSP is offering ESOS services and **Clouston** says he hopes the consultancy sector as a whole will use the scheme as an additional lever to make the business case for energy efficiency rather than approach ESOS as a short-term, money-making exercise. “Irrespective of whether firms want to use consultants or not, my approach is always to stress the potential to clients, and why they should see ESOS as an opportunity,” he says. “It is our job to articulate what the opportunity is and promote energy efficiency as part of a long-term journey. Basic scheme compliance is only good for consultants in the short term, providing a little bit of revenue. But we’re focused on building long-term relationships.”

Barker believes there is a danger that some consultancies will provide no more than a simple compliance service, but says there is an obligation on service providers to offer much more. “As an [energy efficiency] industry we should be doing more to get across the message that it is good business practice.”

NG Bailey is another business hoping that firms fully embrace the opportunity element of ESOS as it works with clients to reduce energy consumption. “We have to push the argument that energy efficiency is something that will benefit an organisation,” says **Robertson**. “ESOS gives service providers another opportunity to have that conversation. Whether service providers like NG Bailey benefit from ESOS will depend largely on how participants embrace the scheme, and that comes back to whether they take a compliance-first view or use it to drive down energy use.”

Barker points out that certification bodies are already promoting ISO 50001, the energy management standard, as an alternative to an ESOS audit. He believes many organisations will opt for 50001: “If 50001 is done properly that wouldn’t be a problem, but some might take that route just to tick the compliance box.”

The skills deficit

Many on the panel raise the issue of auditing skills and whether there are enough highly skilled assessors in the UK to ensure that ESOS audits add value. “There are few good energy consultants in this country,” says **Hughes**. **Clouston** agrees: “Good auditors are extremely scarce. I try to recruit them, so I know how difficult it is to find good ones.”

He says many have a good understanding of the standard technical solutions for saving energy, but describes as “rare beasts” those who have the ability to combine technical knowledge with thinking on their feet to apply a solution in specific circumstances. **Robertson** offers a similar view: “Good auditors have to be able not only to identify the opportunities, but also to help secure the funding and deliver the expected savings. It’s not easy to find those people.”

Hughes says that auditors often lack the specialist knowledge and skills his company requires. For Yorkshire Water, he argues that engineers would be better than energy auditors for energy assessments, particularly when examining the firm’s processing operations. “Someone auditing our head office requires a completely different skills set from someone assessing one of our process sites,” he says. “The head office consumes only about 1% of our overall energy spend, so it is more important to audit our processes effectively. That’s about complicated engineering, hydraulics and biological processes. To carry out an effective assessment, auditors probably need to be process engineers; they need to be able to interact with staff, so must understand the process.”

Hughes points out that, because Yorkshire Water has invested significantly over the years in energy efficiency, much of the “low-hanging fruit” has gone, so assessors will need to come up with innovative solutions.

“We also need them to work within the framework of our business or we have to do a lot of work ourselves on recommendations because they are not in a suitable format to fit our corporate systems and enable us to bid for resources,” explains **Hughes**. For these reasons, Yorkshire Water has taken the decision to do its ESOS assessments internally. Cummins UK also plans to use its own in-house expertise wherever possible

TALKING POINTS

“Irrespective of whether firms want to use consultants or not, my approach is always to stress the potential to clients, and why they should see ESOS as an opportunity.”

“Assessors need to sit down with the client and understand their business and their needs. It’s not just about applying a solution that has worked elsewhere because they think they know best.”

“What skills do ESOS assessors need? Is there a skills gap? Will equipping assessors with the right mix of skills be a challenge for the profession?”



Simon Clouston

Andrew Dutton

David Symons

to comply with ESOS. “We have energy champions in place who know the business, the people and the actions taken over the past few years to reduce energy consumption, so we will build on existing programmes and resources,” says **Manning**.

Barker acknowledges that it is a challenge to find good auditors, but argues that external expertise can bring a new dimension to the assessment process.

“A combination of internal and external expertise can be very beneficial,” he says. “There are always new ideas that can be brought in from outside if you get the right external auditor – someone with good experience of implementing solutions who knows the pitfalls and actual paybacks, not just the theory.”

Barker adds that outside knowledge can also help deliver cross-sector good practice.

Dutton says assessors need to listen more to clients. “They need to sit down with the client and understand their business and their needs. It’s not just about applying a solution that has worked elsewhere because they think they know best,” he argues.

Clouston agrees, talking of the importance of these “softer” skills. “Yes, they need to listen and understand, and not assume what you did before will work again in another organisation,” he says.

There is also concern that, because there will be a spike in demand for assessors in the run-up to the 5 December deadline next year, service providers will be reluctant to invest heavily in developing good-quality assessors for the long term. “There are now degrees and MScs in sustainable energy management, so there are more energy specialists emerging and the future is not bleak. But I worry that, in the short term, the market will be flooded by irresponsible ESOS providers,” says **Hughes**.

Professional opportunity?

Symons is keen to know what the panel thinks the environment and energy profession can do over the next few months to make ESOS a success.

“I think, as a profession, we have to be better at selling the benefits of things like energy efficiency in our own organisations,” says **Dutton**. “We’re usually competing with other functions for resources from the same pot of money. Often, our colleagues are better at selling their project. It tends to be easier to get resources if you show you’ll make rather than save money.”

Barker offers a similar perspective. “Too often, environment and energy practitioners fall back into explaining the technical details of a solution. That won’t win over the board. You need to talk in business terms,” he says. “We need to move from talking about products to talking about the business benefits. A finance director doesn’t want to know about variable speed drives, for example. He or she is interested in what installing them will do for the company.”

“In theory, everyone should benefit from the translation of saving energy to saving money,” says **Manning**. “But you have to make a good business case for spending money.”

Hughes also agrees that being able to sell a project is important and the ability of practitioners at Yorkshire Water to do that well is one reason the company has a strong energy programme, he says. “But, for us, energy is such a huge cost, directors have bought in to the idea that energy efficiency is good business.”

“ESOS is another chance to raise the profile of our profession, that it provides a great career path for young people,” says **Clouston**. “We need to make sure we grasp that opportunity.”

The energy savings opportunity scheme

Is your organisation covered by ESOS?

YES

if it is a private business and on 31 December 2014 it:

- employs more than full-time 250 staff
- or
- has balance sheet assets of more than €43 million and
- its annual turnover is more than €50 million
- or
- it is part of a corporate group where one part exceeds these thresholds in the UK. In this case, all UK parts of the group have to participate in ESOS, even if the parent company is based overseas.

Limited and public companies, partnerships and trusts and are all covered by ESOS. Not-for-profit bodies are also covered if involved in business or a trade.

NO

if the organisation is either:

- in the public sector – meaning the organisation is subject to the Public Contracts Regulations 2006 or the Public Contracts (Scotland) Regulations 2012
- or
- a small or medium-size company.

What energy is covered?

The UK regulation covers three areas of direct energy use:



Buildings

- Energy supplied to and used by the organisation.
- Generated energy (not waste heat captured).
- Not energy supplied to others, used outside the UK or embedded energy.



Industrial processes

- Energy supplied to organisation and which it uses.
- Generated energy (not waste heat captured).
- Not energy supplied to others, used outside the UK, embedded energy in raw materials or energy used by users of the organisation's products.



Transport

- Fuel bought for use by transport.
- Journeys that start or end in the UK.
- Company car fleet, but not personal mileage.
- Cars used by staff driving for business.
- Not commuting, third-party logistics, flights or train travel (unless the organisation operates its own).

MEASURE Calculate the total for these three areas of direct energy that is used by the organisation over a 12-month period (include 31 December 2014).

- Calculations must be a measure of total energy or overall cost of energy.
- Organisations must supply evidence for their figures – do not just make it up!
- If you do not have data, calculations based on “reasonable” estimates are fine.
- Data from other schemes – such as the CRC or EU emissions trading system – can be used.

PLAN At least 90% of the energy used by an organisation has to be covered by the ESOS energy audit. There are four ways to comply (see right).

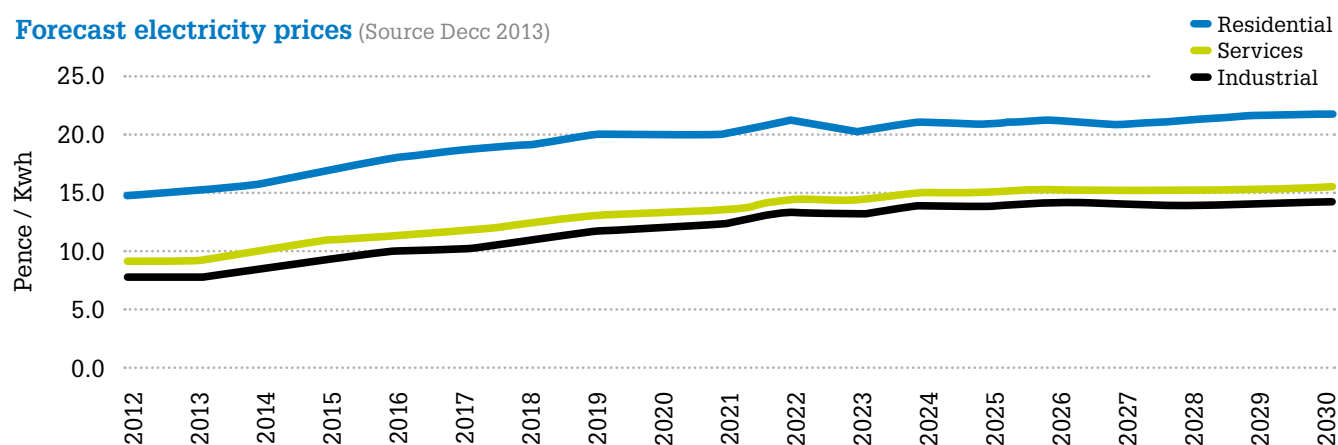
- Organisations can use a different approach for different sites or for buildings, industrial processes or transport.
- Organisations need to appoint a lead assessor to confirm that its plan is robust. The criteria for a lead assessor have yet to be formally defined – they are expected soon.

What if an organisation gets ESOS wrong?

Decc has stressed that it is deliberately taking a “light touch” approach to this mandatory energy assessment and energy saving identification scheme. It wants firms to get it right, but not to obsess about the myopia of the detail. However, if an organisation gets it completely wrong, the national environment regulators – Environment Agency, Scottish Environmental Protection Agency, National Resources Wales and Northern Ireland Environment Agency – have the power to take enforcement action. This will principally be by imposing civil penalties.

ESOS applies in all EU member states. They have different compliance approaches, some of which require notification of compliance in other countries.

Forecast electricity prices (Source Decc 2013)



The background

- ESOS implements article 8 of the EU Energy Efficiency Directive (2012/27/EU). All member states are implementing similar requirements, but using different approaches.
- ESOS is a regulation, but the energy and climate change department (Decc) describes the scheme as “light touch” and there to drive energy savings.
- Decc estimates that ESOS will lead to £1.6 billion net benefits to the UK, with the majority of these being directly felt by businesses as a result of energy savings.
- ESOS is important because UK energy prices are rising, and forecast to increase further (see chart above).
- There should be no costs for complying with the legislation.

AUDIT Carry out assessments and get recommendations for action in 2015.

- ISO 50002 and BS EN 16247 standards set out a good practice method for identifying energy saving opportunities in buildings and processes.
- The Energy Saving Trust and Freight Transport Association have tools to guide fleet energy assessments.
- Audits include site visits, but this will be guided by the lead assessor.
- Audits can include a combination of past and current audits.

APPROVAL The ESOS compliance package has to be signed off by the organisation's qualified lead assessor.

NOTIFY the Environment Agency by 5 December 2015. The agency is the scheme administrator for the whole of the UK.

The confirmation has to be signed off by a company director. Organisations must keep an evidence pack available in case the regulator wants to check what it has done.

What you need to do

ACT on the ESOS audit recommendations.

Scheme participants do not have to implement recommendations, but would be stupid not to.

Four ways to measure energy use and carry out audits

1. ISO 50001 – this is a strong approach, as the international energy management standard includes all of the requirements of ESOS.
2. Use any previous audits carried out to ESOS standard over the past four years. This is probably the best approach if the organisation has good audits.
3. Use Display Energy Certificates or Green Deal assessments. These would work for buildings, but not transport or industrial emissions. Likely to comply, but would not necessarily provide the most robust data.
4. Carry out audits during 2015 – using in-house teams or external advisers.

Organisations may want to apply different approaches for:

- different parts of its estate; or
- buildings, industrial processes and transport.

Key dates

- 31 December 2014 – The qualification date for the first round of ESOS. Look at the 12 months before this day to decide whether your organisation is covered.
- 2015 – carry out audits to comply with the regulations.
- 5 December 2015 – notify the Environment Agency of organisation's compliance.

This briefing has been prepared by WSP as a simple summary of ESOS and is for information purposes only. Organisations covered by ESOS should seek expert advice.

Putting a price on the environment

Yorkshire Water's environmental profit and loss account is an industry first. **Paul Suff** reports

Yorkshire Water has joined the handful of businesses valuing natural capital as a way of embedding sustainability into its core business strategy. Its environmental profit and loss (EP&L) account, which was finalised in July, highlights the risks and opportunities that will drive its long-term business success. Yorkshire Water is the first UK water business to develop an EP&L. The idea is that, by putting a monetary value on positive and negative environmental impacts, the company is better able to manage the challenges posed by climate change, resource scarcity and population growth.

Managing water for the benefit of its customers and the environment requires careful, long-term planning, and Yorkshire Water's sustainability vision is about "taking responsibility for the water environment for good". That vision, says the company, which is part of the Kelda Group, is about doing what is right for its customers, employees and partners, the environment and its investors.

"This holistic and integrated approach is critical to the sustainability of our water and wastewater services and our business," the company says in its 2014 annual report.

Delivering the vision rests on achieving six strategic business objectives (SBOs) over the next 25 years:

- safe water – ensuring water is safe and that its operations do not harm customers or communities;
- trusted company – providing products and services that are trusted by all stakeholders;
- excellent catchments, rivers and coasts – improving the water environment from source to sea;
- water-efficient regions – supplying enough water to meet current demand and in the future;
- sustainable resources – ensuring the company uses, manages and disposes of materials efficiently; and
- strong financial foundations – providing services at a price that customers can afford and generates profits.

"These SBOs are our commitment to sustainability; they encompass all our material issues as a business and shape everything we do," states the company.

It was the work Yorkshire Water did internally and with partners on developing the sustainability vision and SBOs that triggered its decision to produce an EP&L account.

The direction of travel

"We came up with our vision, but then had to ask ourselves what it actually means in practice, and how we would deal with change, such as a growing population in Yorkshire," says Simon Barnes, programme director at Yorkshire Water. "How do we quantify SBOs like sustainable resources and water-efficient regions?"

David Symons, director at WSP, which has been working with Yorkshire Water to develop its sustainability vision and strategy, says that two questions posed by Barnes were the catalyst for developing the EP&L. Barnes had asked: "How will we know we're making progress on delivering the vision? And how will we know when we've got there?" Symons says they are questions that sustainability rarely answers. "The EP&L provides a composite number to help Yorkshire Water's sustainability team understand how it could deliver the strategy."

Yorkshire Water has set five-year plans for each SBO. Symons says the aim of the EP&L is to guide the direction of travel so that the company is a more sustainable business overall at the end of the plan than it was at the start. "It's no good reporting at the end of the five years that direct carbon emissions are down 5% if the much bigger impacts lie elsewhere. You're either asking the wrong questions or kidding yourself that you are making progress," says Symons.

"It's about the direction of travel rather than getting the precise figures," agrees Barnes. "I don't doubt that

there are holes in our EP&L data,” he concedes. “But it’s a start.” He quotes Walt Disney – “the way to get started is to quit talking and begin doing” – to explain his approach, which he says is more to do with acting as a change agent than an environmentalist.

Delivering on the SBOs over a 25-year timeframe means that Yorkshire Water has had to develop a clear picture of how the environmental and business landscape might change. Its 25-year business plan, *Our blueprint for Yorkshire*, which was published in December 2013, outlines some of the expected changes. These include providing services to an additional one million people by 2037 as the region’s population grows; and responding to a projected rise in Yorkshire’s average surface temperature of up to 3.6°C by the middle of the century, as well as more regular droughts and flooding, and unpredictable rainfall patterns. This is against the backdrop of a consistently changing regulatory environment for the water industry.

The first step in developing the EP&L, therefore, was to determine what the future may look like for the water company, and to consider the metrics to apply and the methodology to employ.

EP&L and footprinting

Yorkshire Water worked with WSP to identify the most suitable methodology, eventually deciding to adopt two approaches, EP&L and ecological footprinting.

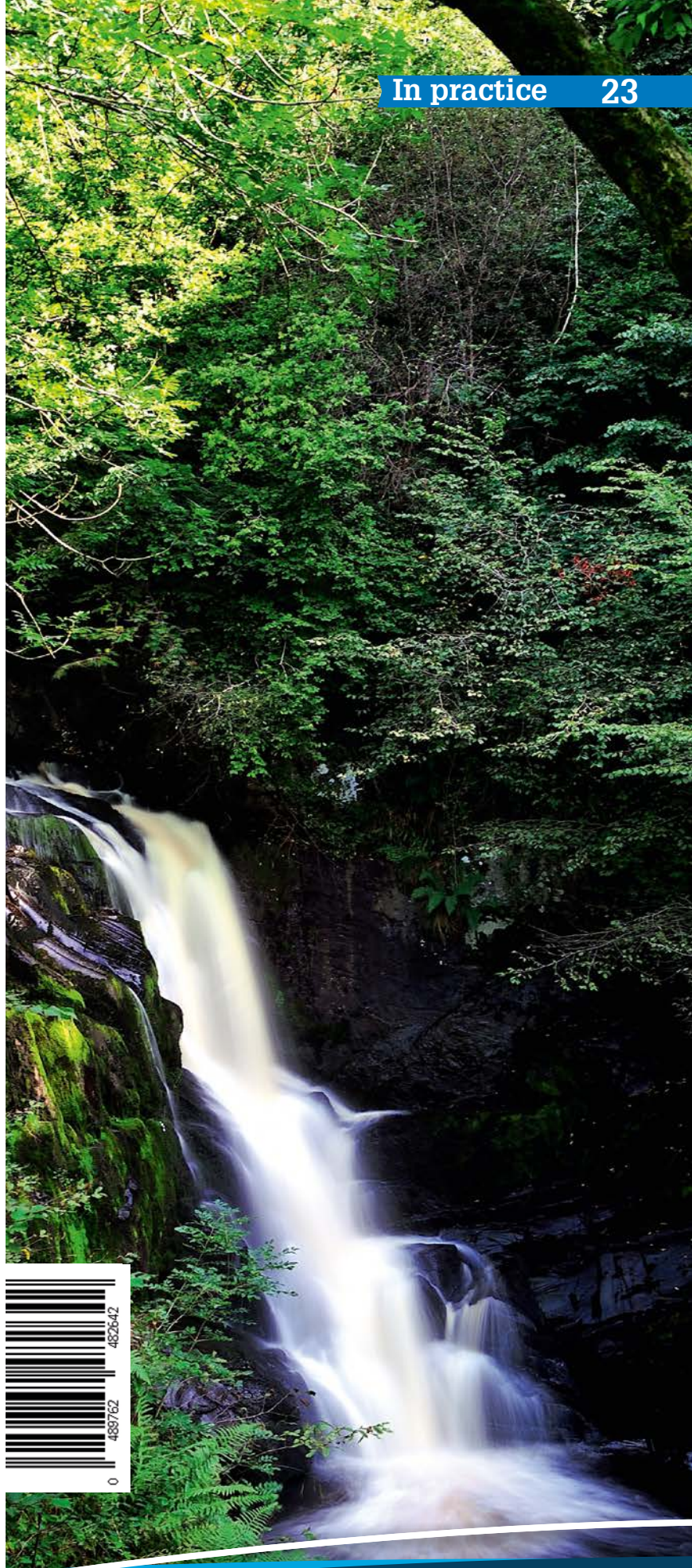
“EP&L puts a monetary value on environmental impacts and, because you’re using a familiar language, it can be used in discussions with board members, finance people and the investors,” explains Barnes.

“Ecological footprinting data by contrast is much more accessible for staff and customers. The EP&L doesn’t mean much to most of the workforce, but they get it when you say that to maintain our current levels of resource use we’d need three and a half planets.”

Yorkshire Water engaged experts at Trucost, including account director Annabelle Bennett and chief executive Richard Mattison, to help with its EP&L; and Mathis Wackernagel, president at San Francisco-based Global Footprint Network (GFN), to assist with measuring its ecological footprint. WSP managed the project, assisting the two technical teams – from Trucost and GFN – to ensure that the EP&L and footprint were comparable in terms of boundaries and data.

“We’d been working with Yorkshire Water for two years on its sustainability strategy, so we had a good understanding of the business and the ‘big’ issues confronting it,” says Symons. He explains that WSP assisted in ensuring the best valuation techniques were applied.

Symons says that, although ecological footprinting is a developed methodology, the EP&L approach is less well





Puma's environmental profit and loss

Sports goods business Puma, part of the Kering group (formerly Pinault-Printemps-Redoute or PPR), published its first environmental profit and loss account in November 2011. The figure assigned for its environmental impacts in key areas, such as greenhouse-gas (GHG) emissions, water and land use, air pollution and waste, generated through its operations and supply chain in 2010 was €145 million. The economic value of its GHG emissions and water consumption was put at €94 million, and the value ascribed to land use change for the production of raw materials, air pollution and waste along its value chain was calculated at €51 million. Only €8 million of the overall total was from Puma's core operations, such as offices, warehouses, stores and logistics.

Jochen Zeitz, now director and chair of the Kering board's sustainable development committee and previously chief sustainability officer at PPR, said at the time: "The Puma EP&L has been indispensable for us to realise the immense value of nature's services that are currently being taken for granted, but without which companies could not sustain themselves. We view it as an essential tool to help drive PPR's sustainability development across its group of brands because analysing a company's environmental impact through an EP&L and understanding where environmental measures are necessary will not only help conserve the benefits of ecosystem services but also ensure the longevity of our businesses."

established. "There are some notable pioneers, such as Puma [Kering group], but environmental economics is still in its infancy. It is fairly simple to ask the question: if nature charged the full cost for its services, what would it be? Finding the answer is more difficult.

"There are four or five ways of valuing the water abstracted from a river, for instance," he says. "They all have merit, but they will provide very different numbers. We were on hand to offer guidance and to challenge some of the outcomes."

Barnes says measuring Yorkshire Water's operational and supply chain impacts, such as greenhouse-gas emissions, waste disposal and pollution impacts, was reasonably straightforward. The company already had in place robust data on fuel consumption, sludge effluent, water discharge and land use. Trucost, meanwhile, used a combination of additional primary data and its own modelling to provide data on the impacts from Yorkshire Water's supply chain.

Analysts at Trucost then applied monetary values to the traditional sustainability metrics from its own library of regional environmental impact valuations, which it maintains from a stock of peer-reviewed academic research to calculate effects at a local level. Trucost can, for example, calculate the local cost of air pollution on human health, crop and forest yields. Its figures for water use focus on local water availability, among other things, while its valuation of land use takes account of the local environmental services that are lost when that land is converted to business use.

Symons says that one of the main challenges in developing the EP&L was ascribing a value to water. "That is fundamental to a water company and would be a colossal line in any water firm's EP&L, but it is not easy to arrive at a figure." He explains that it is

hard, for example, to assign an economic value for biochemical oxygen demand, which is the amount of oxygen consumed by organisms in breaking down the waste in a water body, or for the presence of endocrine disruptors. "There are simply no appropriate economic metrics," says Symons.

"But just because some of the figures are lacking, that shouldn't stop you doing an EP&L," he continues. "You just have to accept that there are limitations." However, he believes that economic science will catch up and develop robust values.

Making a difference

Symons says the key to an EP&L is what you do with the numbers. He advises companies to use it as a "signposting" tool to identify their biggest risks and opportunities. Barnes is keen to convey how Yorkshire Water is using the EP&L as a useful business tool rather than as an academic exercise of no real practical use. "I carry it around on my iPad and use it to engage suppliers. I use the EP&L with the senior management groups to highlight the opportunities and risks that drive our long-term business strategy."

He illustrates its usefulness by describing how the EP&L has been used to support investment in bio-energy plants, which process sludge into biogas to generate heat and electricity. An innovative approach used by Yorkshire Water involves thermal hydrolysis to treat and dispose of sludge. "We have been working on this for five years and believe our method will deliver three times the energy generated by existing energy-from-sludge plants," says Barnes.

"We applied the risk-based approach used in the EP&L to build the business case for developing the thermal hydrolysis technology. Rather than invest piecemeal in small-scale research and development, we used the EP&L to show why we should invest in this one innovative scheme. It revealed that, for the same capital investment for a plant to simply process the sludge, we could build an energy plant, reducing both operating costs and greenhouse-gas emissions."

Barnes believes that some of the investment decisions made by water companies since the industry's privatisation might have been different had an EP&L been available. "Would the same energy-consumption-heavy wastewater treatment facilities built in the mid-1990s have been constructed if companies knew they would have to drive down greenhouse-gas emissions?" he asks.

Going forward, Barnes sees the EP&L being crucial in informing business decisions. "The office for national statistics forecasts a 20% increase in the population of Yorkshire over the next 25 years. Does that mean we have to increase our assets by a similar amount to provide water services for them? And, if we do, what does that mean for our emissions?"

"Population growth also has to be considered against our SBO to develop a water-efficient region, for example. So, would it better if we worked with businesses and residential customers to drive down water use so we can provide services without increasing our assets? The EP&L enables us to have these debates and to drive innovation," says Barnes.

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The view from above

Lucie Ponting discovers how satellites and remote-sensing technologies are aiding companies like Drax and Ecover

Landscape intelligence is how earth observation data specialist Rezatec describes its use of satellite and other remote-sensing technologies to help businesses manage their land-based assets and respond to environmental changes.

Since its formation two years ago, the company, which originated at University College London (UCL), has used earth observation (EO) techniques on projects ranging from measuring carbon stock to mapping Mallorca's bio-economy. Partners include organisations as diverse as the European Space Agency (ESA), green cleaning products manufacturer Ecover, British Sugar and power generator Drax.

"Threats to food and water security and pressure to find new sources of renewable energy are placing ever-increasing demands on our land and its use," says Philip Briscoe, Rezatec's marketing director. "Landscape intelligence, which involves collecting and scientifically analysing satellite and other EO data, can help us map, measure and monitor land so organisations can optimise use, mitigate risks and meet legislative requirements."

Satellite and other aerial observations have long been used to forecast weather, monitor climate change, identify natural hazards and track biodiversity trends. But Rezatec, which is based at Innovate UK's (formerly the Technology Strategy Board) Satellite Applications Catapult within the Harwell Space Cluster, has developed an innovative software platform that is cutting the cost of incorporating sophisticated satellite and other aerial and ground-based data into business decision-making.

Innovate UK, a non-profit research organisation, set up the Satellite Applications Catapult – one of seven catapult centres serving different sectors – to help businesses take new ideas connected with space and satellite technology, and develop them into commercial applications. "Being here in this building is extremely useful because it puts us at the centre of UK space technology," emphasises Briscoe.

Leaf area index

Rezatec – which employs staff with backgrounds in software development, EO tools, and forest and agricultural management – was set up to calculate carbon stock in agricultural land and forests, and build a global database. "At UCL," says Briscoe, "they saw an opportunity to derive carbon stock from above-ground biomass, providing a more cost-effective and scalable way of estimating the amount of carbon residing in a particular area."

"Traditional methods are ground-based and expensive. You can't do it very frequently and you can't really scale them. So we took well-established data available from NASA's MODIS satellite and from there derived a leaf area index that identifies how much of an area is leaf." Rezatec then incorporated other landscape intelligence on issues such as slope, elevation and soil type to estimate how much carbon was in a particular section of forest, given the leaf area index. "From that – using modelling and regression analysis – we derived a carbon number per kilometre squared," says Briscoe.

Earth observation

Earth observation (EO) uses remote sensing technologies such as satellites and aerial sensors, supplemented by ground-based observation, to gather information about the earth's physical, chemical and biological systems. Data gathering techniques include:

- satellite – multispectral data can be used to monitor and detect changes in vegetation health and synthetic aperture radar (SAR) data to measure soil moisture and topography;
- aerial and unmanned aerial vehicles (UAVs) – UAVs can help measure a crop through its growing cycle; and
- ground observations – smartphone applications can collect and upload field data to verify remote sensing information, such as evidence of illegal logging.

Given the lack of stability in the carbon market, the company decided to look at where it could apply the technology it had used in carbon modelling to other commercial activities. "We took the idea of landscape intelligence – understanding the land and using whatever type of EO data and techniques we need to do that – and focused on key areas such as food, water and energy," says Briscoe.

The decision to concentrate on these areas was triggered by higher-level global requirements. "Water security, for example, is always a huge issue," Briscoe says. "And not just for drinking water but also for agricultural use; how do you manage that?" On the energy side, the search for renewable sources is intensifying as oil and gas reserves run out. "If we look at biofuel and biomass, we can use EO techniques to help demonstrate compliance with sustainable forestry management and biomass production to fulfil EU and UK legislation." In the agricultural sector, EO techniques can tackle food security issues – helping food manufacturers and suppliers ensure security of supply sustainably. "Brand protection and reputation are critical," says Briscoe. "The last thing a brand wants is to be involved with a supplier causing deforestation or biodiversity loss, and organisations can't transfer responsibility to the farmers or other suppliers."

Rezatec's concept of landscape intelligence is based on the belief that all these issues are ultimately linked. "It's about understanding the best way to use land and EO gives you a way of doing that," explains Briscoe, "which perhaps wasn't possible in the past, and certainly not in any scalable way."

Map, measure, monitor

Rezatec maps, measures and monitors data available from an array of sources. "This might sound a bit simplistic," says Briscoe. "But you need to map and understand what you've got, then be able to measure and analyse it, and then, because it's not a one-off process – some investments in different practices take years before they produce results – you need to monitor those changes."



A biomass blueprint

In August this year, a business-led consortium involving Rezatec, power generator Drax, consulting firm E4tech and the University of Edinburgh announced a nine-month project to develop a service providing biomass and bioenergy firms with more accurate data to certify the origin and sustainability of wood biomass.

The project will assess the environmental impact of Drax's wood pellet production from forest feedstock in north America using Rezatec's methodology for extracting carbon estimates from earth observation (EO) data. Dr Ausilio Bauen, director of E4tech, said his company had initiated the project because it believed EO information would be important in determining and monitoring the sustainability of biomass for energy.

Nigel Burdett, head of environment for Drax Power, emphasised that Drax would purchase only biomass that could be proven to have been produced in line with the company's sustainability policy and exceeded thresholds set by Ofgem for subsidy support. "We're aiming to be the benchmark for knowledge around determining the temporal carbon flow consequences of biomass for energy," he added.

Rezatec chief executive Patrick Newton said he hoped the project would overcome the challenges of obtaining cost-effective and accurate datasets to support sustainability obligations and serve as a "blueprint for sustainable biomass production".

The process starts with gathering data if necessary and available, or commissioning research for new data, from disparate sources such as satellites, unmanned aerial vehicles (UAVs), otherwise known as drones, or ground-based options such as smartphones and tablets. "For some of the work we've done with peat monitoring in south-east Asia, we've developed apps for mobile phones or tablets," says Briscoe. "People can go out to the fields, make observations and do things such as measure peat depth. This information is then sent dynamically to a central system, so it automatically updates."

As the data is collected, experts from a range of disciplines apply scientific modelling and analyses to take measurements and monitor change based on organisations' individual requirements. Relevant data and analyses are displayed using a secure, customised platform interface. The Satellite Applications Catapult provides additional support by helping to store and manage project data at its climate, environment and monitoring-from-space facility.

"Within the business, we've got commercial people, EO scientists who can use the tools and understand the environmental context, and software engineers who can develop new tools to bring together data, analyse it and present it," says Briscoe. "But while we've got a peat expert and a carbon expert, we won't necessarily have someone who knows about specific crop modelling, so we will then work with a university or a specialist consulting organisation."

Waste and pollution

One of Rezatec's recent collaborations was with Ecover on its "Glocal" project in Mallorca alongside Forum for the Future, the sustainability think tank. "We worked with Ecover on a pilot looking at the feasibility of mapping natural resources on the island and then using waste products from crops and farming – seeing which of those waste streams could be turned into cleaning products," says Briscoe. "The idea was to create a new kind of circular bio-economy, providing an economic boost for different clusters on the island."

Using EO data, Rezatec mapped the location of crops, which included olives, citrus fruit, vines and carob. "Using the dashboard for this project, we could drill down and look at the different layers of information to show where the crop is grown, its density and type, and the amount of crop waste," says Briscoe. This data then provided the starting point for the University of Barcelona to analyse the different waste products and look at which of these could be turned into something useful.

"It was a theoretical project to learn about the potential of the bio-economy," says Briscoe. But he believes the approach could benefit larger ecosystems, and even be applicable to a whole country. "Our techniques help us understand agricultural waste streams, which can help identify where waste can be transformed and used to create new products, with potential benefits to whole industries, livelihoods and wider economies."

Another area in which Rezatec has been working is catchment management. "We've been helping water companies in the UK manage water quality by looking at agricultural land use and related sources of diffuse

pollution,” says Briscoe. “If there is a particular crop or perhaps cows grazing adjacent to a river, we can map that using EO and analyse the risk of diffuse pollution.” The water companies and landowners can then work with agronomists to decide on mitigating action, such as buffer strips or altered farming practices.

Initially the risk map offers a coarse-level view of a catchment by bringing together publicly available datasets. From this, it is possible to identify likely risky areas to investigate at a much finer level. “If the coarse-level data triggers a risk indicator, we can then commission UAV or buy commercial data to identify the precise pollution sources,” says Briscoe.

Because many water companies do not own the land, the catchment management approach relies on the wider involvement and cooperation of farmers and landowners upstream. Farmers can have a unique view of their farming practices from the EO data, and help provide real-time ground-data collection, for example by flagging via apps for tablets and smartphones when particular fertilisers are applied to specific fields.

Peat spotting

Rezatec’s project with ESA involved developing a “peat spotter” data service that offered a cost-effective and accurate way to identify peatlands and their integrity over large areas. “We’ve worked in south-east Asia on tropical peatlands as well as on temperate peatlands in the UK,” says Briscoe. The aim was to better understand the structure and integrity of the peat – its extent, depth and state of degradation, as well as the associated vegetation types, soil moisture and degree of anthropogenic disturbances. “This information means you can calculate things like its carbon volume and decide where to apply restoration and conservation efforts,” he says.

Peat sequesters more than twice the carbon stock of forests worldwide, and is also an important source of drinking water and habitat for plants and animals. But both tropical and temperate zone peatlands face significant threats. “So much of it has been dried out and degraded for all sorts of reasons,” says Briscoe, “whether it’s been burnt or reused for farming.”

As with the catchment management work, the first stage is a coarse assessment to identify high-risk areas and prioritise where restoration work is likely to be most effective. “An area of less degraded, deep peat will give you a much better return in terms of carbon storage or ability to store water,” explains Briscoe, “as opposed to a degraded, shallow area. Of course, ideally you’d want to do it all, but that’s not realistic.”

In future, he hopes it will be possible to do further work with plantation owners in south-east Asia to improve the quality of their peat and, for those who want to change land use, help them identify the most valuable peat areas and work with them to find alternatives.

Crop yield optimisation

Crop yield optimisation is another area where EO techniques can offer organisations a broader perspective. In a project funded by Innovate UK, Rezatec has been working with British Sugar and

agribusiness consultancy Rectory Farmhouse to examine how to increase sugar beet yields by analysing the plant through the growing cycle via satellite, UAV and ground-based observations. The idea is to help UK growers make the most of local environmental conditions to increase annual yield and for British Sugar to have more transparency in its supply chains.

In this case, the Rezatec dashboard includes embedded data about each field and grower, as well as the status of the plants (how many and when they were planted). “Essentially what we’re measuring here is the space between plants – the amount of soil you can see – which provides the indicator of how large the plant has grown,” says Briscoe. This is then compared with the industry-growing model, ABSugar BEETGRO. “At each point, from when the seeds emerge, through the growing season to harvest, we’re taking observations and calibrating them,” he adds. “We can then work out the health of the plants and allow the farmer to take mitigating action.” If plants are stressed, they might need more water or spraying, for example.

For British Sugar, which is the sole beet buyer in the UK, the EO data can help it to understand its supply chain and better estimate what volume of beet is coming into its production facilities and when. “They know that if the plant is x cm across at a certain point, it is, say, 10 days from that point to harvest,” says Briscoe. “So they know a particular field or farmer will harvest on a particular day and a certain volume is coming in to them.

“You can apply this approach to any crop and any geography,” he adds. And there are even wider implications associated with improved prediction of supply and prices. “On a commodity trading level,” he suggests, “if you have insight into perhaps what the wheat harvest in Ukraine is likely to be, this could invaluable.”

Future proofing

Briscoe acknowledges that, although the technologies Rezatec uses are “exciting and different”, organisations also need to understand how these bring benefit to their bottom line. “It is not just about seeing things they would not otherwise be able to see, but also about risk and reputation management, optimising land-based resources and managing compliance.”

With technologies developing all the time, and the costs coming down, the potential benefits are only likely to grow. “We are particularly interested in the new nanosats [very small satellites of 1-10kg] that are increasingly going up,” says Briscoe. The other big development is the ESA/EU Copernicus programme and its sentinel satellites. Sentinel-1A is now up and operational. “This will be SAR [synthetic aperture radar] data, which is very good for looking at things like soil moisture and will help a lot of the things we do,” he says.

“Issues such as climate change and food and water scarcity are massive global challenges but, at an individual level, all organisations are going to have to adapt in some way,” Briscoe adds. “They have to be realistic; they have to look ahead and EO analysis allows them to do that and be more intelligent with the resources they have.”

Lucie Ponting is a health, safety and environment journalist.



Changing

Jan Maskell describes what sustainability professionals can learn from psychology

The Going Green Working Group – part of the British Psychological Society – recently conducted a survey of sustainability professionals. It found that an emerging issue, one that is highly challenging both now and in the future, is the integration of sustainability into core business. Psychology focuses on factors that influence an individual's behaviour, either the individual alone or as part of a group. It is individual change that can achieve social, economic and environmental sustainability, ultimately embedding these into the core strategy of organisations.

Psychological research can explain why people behave responsibly and sustainably, and the possible factors that can motivate sustainable actions. Applying psychology helps to create the conditions that make sustainable action the most appealing or natural choice.

Irrational beings

Research by Nobel Prize winner Daniel Kahneman, senior scholar at the Woodrow Wilson School of Public and International Affairs in the US, indicates that we are not rational decision-makers; our thinking is the product of two parallel, separate systems of reasoning. One is a fast, automatic, associative system, which is unconscious, sensory driven and impulsive. The second is a slow, reflective, rule-based system, which is conscious, rational and deliberate.

Occupational psychologists and sustainability professionals can take into account these differences and create circumstances where *fast* thinking enables us to make the most appropriate, sustainable decisions without having to use effortful *slow* thinking. There are six stages – the so-called 6Es model – where psychologists and sustainability professionals can work together.

Explore – options for improvement

Does the organisation have a business strategy? Was it developed by the whole organisation?

Organisations are often already doing very useful things that can be reused and developed for sustainability purposes. Leadership development, for example, can include sustainable leadership. Recognising what you already do well is a constructive and



behaviour

creative method to use rather than trying to start from scratch. By using techniques from “appreciative inquiry” – a model employed to discover what is best about an organisation, what it could become, what it should be, and then making it happen – organisations employ positive psychology to set the agenda for change and improvement, creating a vision of how things will be.

For 80% of people who are unwilling to take, or who are unaware of the need for, sustainable actions, a perceived lack of personal control with a high level of perceived risk generates dissonance, and is a possible root for the lack of sustainable behaviour.

Attribution theory, which is concerned with how people interpret events and react, suggests that, although individuals will be aware of their own personal control to take action, they believe one of the following responses:

- I have not caused this – so there is no perceived link to the consequences;
- I don't see any impact – so there is a remoteness from the effects; or
- I cannot make a difference – so there is a lack of control over the situation.

The extent to which individuals believe they can control the events affecting them – the so-called locus of control – is seen to be with the organisation, the government or agencies. This is where organisational interventions help individuals to take action.

Encourage – make it easy and worth doing

Are there organisational plans with a goal for reducing carbon emissions by a set time, divided into team and individual goals? Are there feedback loops to know how well you are doing against your goal? How much have your carbon emissions reduced?

Work on goal-setting by Edwin Locke and Gary Latham shows that goals are motivating: directing attention, maintaining momentum and guiding towards successful strategies. The most motivating goals are those that are specific, challenging and realistic. Specific goals are stated in concrete terms, such as improve performance by 20%, or in behavioural terms, for example cycle 20 miles a day. These are better than vague statements, such as “do your best”.

Feedback improves performance when working toward a specific goal. Feedback works because it creates cause-and-effect connections in a person's brain – someone wanting to avoid negative outcomes and seeking positive outcomes. When a person receives positive feedback for putting a plastic bottle in the recycling bin, their brain notices the reward and they will want to repeat the behaviour in future.

Is it easier to behave sustainably than not? Is sustainable behaviour the default option?

Situations can be structured so that sustainable action is the default option. People can choose. However, most people will not bother to make the effort needed to switch from the default option to something else. If you make the default meal option a low-carbon one (low in animal products), with the possibility of requesting a meal high in animal products, few people will take the trouble to change.

In addition, make the most sustainable option the first, most obvious choice. For example, when you are giving directions to a location, provide the public transport information, the bike or the walking directions first, followed by other options.

Enable – educate and develop

Does your organisation run workshops and training to educate and enable employees to try out and develop new ways of working more sustainably?

When an organisation runs an awareness programme, bringing people together to educate them, it will be applying aspects of Richard Ryan and Edward Deci's self-determination theory (SDT). It is concerned with the motivation that influences people to choose a specific option, and the degree to which that behaviour is self-motivated and self-determined. SDT suggests that people are drawn to activities where they feel autonomous, competent and with a sense of relatedness to others.

People need information that helps them safely gain the knowledge and skills they need; helps them choose; and gives them the opportunities to try things.

Organisations can support this by:

- creating a safe, supportive, non-threatening environment to gain competence and mastery;
- giving people a chance to try things out;
- demonstrating things in person or video and running through the steps; and
- making experts available to answer questions.

Do your campaigns use clear images, icons and analogies about what individuals can do, and the impact this will have?

One powerful way to overcome perceptual limitations is to recreate the information missed by an individual's senses with vivid, concrete images and to connect behaviour with impact. Putting images on labels and posters, such as those on recycling bins, helps to connect the behaviour with the item. Analogies make abstract numbers into something people can understand or visualise. For example, recycling one drink can save enough energy to power a TV for two hours.

Engage – get people involved

Does your organisation have green teams, supplier networks or project teams to consider how to reduce emissions or resource use?

Encouraging direct social contact with others who already do something sustainable increases the likelihood that more people will pick up that behaviour. Networks of people who work together to become more sustainable have another psychological influence: they promote an environmental social identity. When people feel part of a group, they are more likely to adopt the values and behaviours associated with that group.

There is evidence that social influence from these network interactions has helped people to change their behaviours and maintain or increase the change for at least two years after the change programme finished.

Exemplify – lead by example

Is there obvious leadership commitment and support for sustainable actions?

Research shows that people are more likely to respond to a request for action when the appeal comes from someone they know – and the people closest to us influence us the most. Having managers demonstrate the desired behaviour is important for two main reasons: leaders and managers should be seen to

behave responsibly; and their behaviour should be consistent with organisational policy.

Social norms are the implicit social rules that govern behaviour in an organisation and can create opportunities for change, but these are constantly shifting. Communicate with normative messages, such as: “70% of our employees have signed up for the energy reduction programme”; or “Seven out of 10 people in the Manchester office consistently recycle”.

Use expressions, such as “many of your colleagues” or “other staff in this building”. This gives people evidence, and social proof, that sustainable behaviour is not only acceptable but that it is desirable.

Evaluate

Evaluation is important for making further improvements. There are two main assessment techniques. Formative evaluation focuses on what has been achieved and is used to monitor change and determine where improvements need to be made. Summative evaluation will focus on whether the concrete individual and organisational goals have been achieved. This will examine what the benefits are for the individual employees, customers and suppliers, as well as the community.

Jan Maskell, AIEMA, is a business psychologist and partner at Appreciative Learning.

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Readers' end of year quiz 2014

1. What will the European commission withhold to drive up their price?
2. Which country, along with Luxembourg, tops the league for being the most resource productive in the EU?
3. Which UK power station is set to become the country's largest single renewable electricity generator in 2016 and why?
4. According to a survey, 81% of the world's largest 250 companies now report the environment and social risks facing their operations, but what vital piece of accompanying information do they usually omit?
5. What was introduced in 2014 that will significantly increase the cost of breaching environmental laws?
6. Which disappearing online information source has created a storm among environment practitioners and many businesses?
7. Air quality experts identified a street in the UK in the summer as the most polluted in the world. Which street achieved that unwanted accolade?
8. What was adopted by EU leaders in 2014 but will not come into force at national level until spring 2017?
9. A UK company sought the first substance authorisation under the EU REACH Regulation in 2014. Which company and what was the substance?
10. What information went electronic from January 2014?
11. Which country became the latest to introduce a charge for single-use carrier bags?
12. What is being reduced by more than 80% to help businesses?
13. Which countries top the global league tables for ISO 14001 and ISO 50001 certifications?
14. What should have cost £30 by 2020 but will now cost just £18 after the chancellor changed his plans?
15. Which European city restricted cars entering its boundaries in March to tackle high levels of air pollution?
16. Which 10 football teams participating in the 2014 World Cup finals played in kits made from recycled plastic bottles?
17. Which three cities were ranked as the world's smartest in 2014 for their long-term sustainability by academics at the IESE Business School in Spain?
18. A UK company reported this year that it had saved £25 million in 2013/14 by reducing its operational carbon emissions. Can you name the firm?
19. Which football stadium is installing 380,000 LEDs to to provide coloured lighting patterns and animations?
20. Which UK food retailer reported in 2014 that 95% of its fresh produce was at risk from climate change?
21. Eight of these have been used to cross the capital. What are they?
22. How many of the 43 air quality zones in the UK are on course to meet the 2015 deadline for EU limits on nitrogen dioxide?
23. Better use of what could save European businesses a cumulative €630 billion a year and reduce annual greenhouse-gas emissions across the EU by up to 4%?
24. What are expected to contribute 0.6% of global warming by 2050?
25. What is the department of communities and local government proposing to raise from 0.5 hectares to 5 hectares?
26. Which investment fund, built on oil money, has taken the decision to divest from fossil fuels?
27. Which UK company has placed a \$40 price tag on 1 tonne of carbon?
28. What can deliver economic, social and environmental benefits worth, on average, \$664?
29. What could trigger £33 billion worth of investment and create 64,500 skilled and semi-skilled jobs in the UK?
30. Name the new EU commissioners for energy and climate, and environment, maritime affairs and fisheries?
31. The onshore wind industry received €10.1 billion in subsidies across the EU in 2012, according to the European commission. What other energy source received the same amount?
32. What percentage of respondents to a survey by EEF reported that their senior management had little or no involvement in their environment management system (EMS)?
33. Which three environmental issues in particular did the Environmental Audit Committee find that the government was failing on?
34. 500 million hectares of which type of land use need to be restored by 2030, according to the Global Commission on Economy and Climate?
35. Which UK politician said this, and to whom was he speaking? "I remain open-minded to the possibility that climate change may one day turn dangerous."

Answers on p.39.

Campaign to tackle 'perfect storm' gathers momentum

IEMA's campaign for action on bridging the global economy's environment and sustainability skills gap was launched in October and has since generated significant interest and support

Accompanied by a report, *Preparing for the perfect storm: skills for a sustainable economy*, IEMA's campaign highlights that just 13% of organisations say they are fully confident that they have the required skills to address the threats caused by massive population growth, soaring energy costs, diminished availability of materials, rising demand for natural resources and more climate-related weather events.

These are expected to affect every organisation, yet the gap in the supply and demand for environment and sustainability skills threatens businesses' long-term survival. IEMA's skills for a sustainable economy campaign has been conceived to bring together professionals, professions, employers and politicians to develop a collaborative course of action to bridge the gap.

The campaign has already received considerable coverage in environment and business press titles and impressive social media activity from members – IEMA head office has seen a surge in tweets and blogs about the report and the Institute's aims. There is also a rapidly growing list of high-profile individuals and organisations lending their support to the campaign.

At the time of going to press, 25 organisations had backed the campaign. These include small and large consultancies, multinational blue chip corporates, manufacturers, employment agencies, construction organisations, unions and trade bodies, and research institutes (see panel, right). Two high-profile individuals, Joan Walley MP and Forum for the Future's Jonathon Porritt, are also lending their support. Offering his backing, Porritt said maximising the benefits of the emerging green economy would not happen without sustained and extensive investment in the skills and capability.

IEMA is seeking to continue adding organisations from across the economy to the list of supporters into 2015, especially as the UK general election approaches in May. A full list of quotes from supporters, which explain why each has chosen to back IEMA's campaign, can be found at iema.net/our-campaign-supporters. Anyone who wants to become involved in the campaign should visit iema.net/get-involved or e-mail skills@iema.net for further details.

Updates on the campaign's aims and achievements will be included in future issues of *the environmentalist* and member e-newsletters.



Policy update



IEMA position on sustainability skills

On 10 December, IEMA will be back at Westminster to launch its position statement on creating the skills needed to drive the transformation to a sustainable economy. The event will be hosted by Joan Walley MP, chair of the Environmental Audit Committee, and will bring together 200 members, supporters and partners.

The statement will present the response needed across governments, and the education and business sectors to the global megatrends and sustainability skills gaps identified in October's report, *Preparing for the perfect storm* (left). The statement will set out the key IEMA expectations on the next UK government, and set the framework for significant action across the membership through next year and beyond. With more than 60% of IEMA members working in business, the statement has a strong emphasis on the role of environment and sustainability skills, both in organisations and between them. The need for greater uptake of systems to enable lifecycle thinking, collaboration, innovation and improved sustainability performance across the value chain also features prominently.

The statement forms part of IEMA's campaign to upskill the economy to meet the challenges and opportunities the future holds. Details on the campaign, including how your organisation can get involved are available from iema.net/skills-campaign. IEMA has had some great feedback on *Preparing for the perfect storm* and can supply members with further hard copies and supporting information to share with suppliers and their networks.

The campaign and activities resulting from the position statement will continue well into 2015, particularly in the run up to next May's general election. In June 2015, IEMA will host a conference in London, which will focus on the organisational responses to the skills challenge of creating a sustainable economy.

Josh Fothergill is policy and engagement lead at IEMA; j.fothergill@iema.net

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ISO 14001 certifications top 300,000

The latest data from International Organisation for Standardisation (ISO) on the uptake of 14001 reveals that the number of certificates issued worldwide in 2013 exceeded 300,000 for the first time. The rising popularity of 14001 comes ahead of the expected implementation next year of the new version of the global standard for environment management systems (EMS).

IEMA can report that the figures it has seen from ISO show a global year-on-year increase globally of almost 17,000 certificates between 2012 and 2013, from 284,654 to 301,647.

The UK is fourth in the league table of nations with the most number of certificates, just behind China, Italy and Japan. The UK was fifth in 2012. There was an increase of 996 14001 certificates in the UK between 2012 and 2013.

Martin Baxter, IEMA's executive director, policy and engagement and the UK's appointed expert to the 14001 revision working group, commented:

"It's fantastic to see that the total number of ISO 14001 certificates has not only continued to grow year-on-year, but that the total figure has reached a real milestone of over 300,000 certificates worldwide. With less than one year to go before the new version of the standard is expected to be implemented, I expect to see a continued trajectory of growth."

Proposed changes to 14001 include: a better understanding of the context of the organisation when establishing the scope of the EMS and a clearer definition of the role and responsibilities of top management.

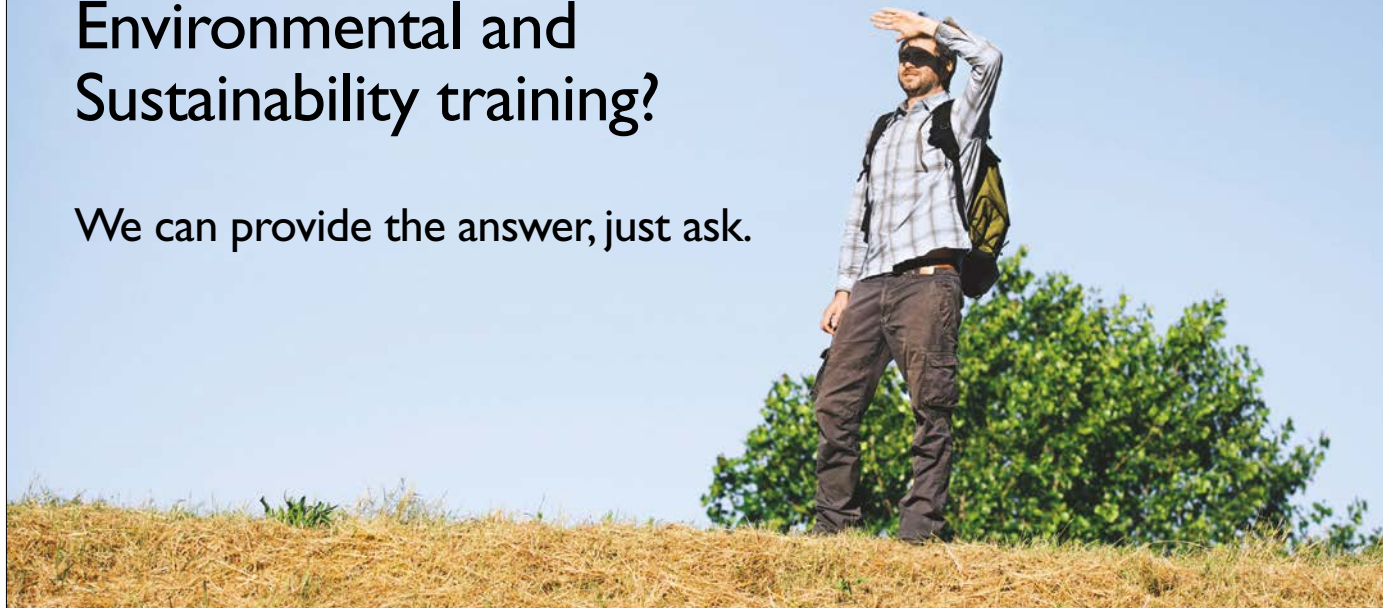
News of the almost 6% rise in 14001 certifications in 2013 came as Baxter (pictured) presented details of the revised standard at IEMA's EMS national forum. Delegates benefited from gaining insight on the changes and details on the opportunities arising from the new requirements.

The forum, sponsored by NQA and supported by RSK, took place in London on 26 November. A report on the event will feature in the January 2015 issue of *the environmentalist*.



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More successful IEMA members

IEMA would like to congratulate the following individuals on recently upgrading their membership as part of their commitment to learning and professional development.

Associate

Dee Allen, Marine Management Organisation
Paige Atkinson, Richmond Safety Services
Jane Baker, Kohler Mira
Carl Beckett, ArcerlorMittal Distribution Solutions UK
Lisa Bertrand, Sustainable Opportunity Solutions
Anthony Bishop, The BDL Group
Kevin Bradley, Keltbray Group

Keith Braidley, Toyota Material Handling UK
Steven Caucutt, BAM Nuttall
Jason Chambers
Christopher Chandler, Resource Data Management
David Clegg, EON
Harry Collins, Lighthouse Safety Training
Rebecca Cosgrove, Ball Packaging Europe
Andrew Davies, ABB
James Ennis, Network Rail
David Esdaile, Thurrock Council
Kenneth Fennell, Tower Transit
Zoe French
Paul Goodliffe
Rachel Griffith
Rebecca Griffiths, EON

Joe Inskip, Bridon International
Timothy Jackson, Thorntask
Paul Kenny
Graham King, Keltbray Group
Andrew Kirk, Tata Steel Projects
Tom May, Romtech
Delena-Marie Naor, Carillion
Michelle Phillips, BOC Group
Maria Quinn, RPS Group
Daniel Quirke
Thomas Rose, Turner Estate Solutions
Denise Sofia
Richard Stables
Matthew Timothy, Flogas Britain

Letitia Weeks, Rio Tinto
Steve Winn

Full Membership

Tapiwa Gavaza, Conisbee

Full and Chartered environmentalist

Sanmita Palit, Mott MacDonald
Simon Smith, QinetiQ

Chartered environmentalist

Amy Shuffleton, Costain

Upgrading your membership is key to you gaining professional recognition. Learn more at iema.net/membership-upgrade or call +44 (0)1522 540069.

IEMA events

Date	Region/Time	Topic	
3 Dec	Yorkshire and Humber	Christmas social	
4 Dec	South West	Christmas social	
4 Dec	South East	Christmas social	
17 Dec	South West	Christmas social	
Webinars			
3 Dec	12:30pm–1:30pm	Environment Agency activity on sustainable resource management	
2015 conferences – more details in the January issue of <i>the environmentalist</i>			
Mar	Bristol	Sustainable cities	
Jun	London	Skills forum	
Sep	London	Sustainability conference	
Nov	Manchester (tbc)	EMS national forum	
2015 external professional events			
22 Jan	London	Investing in the UK green economy: challenges and next steps for policy	lexisurl.com/iema44756
29 Jan	London	Corporate water risk	sb-water.net
24 Feb	London	Next steps for the UK renewable energy sector: priorities, subsidies and 2030 targets	lexisurl.com/iema44758
24 Feb	London	Smarter sustainability reporting	sb-reporting.net
3–5 Mar	London	Resource 2015	resource-event.com
21–23 Apr	Birmingham	Sustainability Live 2015	sustainabilitylive.com
17–19 Jun	London	Energy and environment expo 2015	energy-enviro-expo.com

Lisa Hawker

Senior environmental consultant and project manager, Parsons Brinckerhoff



Career file

Qualifications:

BSc, MRes, CEnv, MIEMA

Career history:

2013 to now senior environmental consultant and project manager at Parsons Brinckerhoff

2009–2013 senior environmental consultant at OHES

2004–2009 graduate geo-environmental consultant (including studying for a master's in research) and geo-environmental consultant at Crossfield Consulting

Why did you become an environment/sustainability professional? Some high-profile environmental disasters occurred while I was growing up, and they made me realise that I had to assume personal responsibility for my impact on the environment. I was raised in the Midlands during a period of huge socio-economic change and became very aware of the positive financial and social effects of regeneration. It was while I was doing my A-Levels that I decided to pursue a career in land regeneration.

What was your first environment/sustainability job? My first role involved assessing land to facilitate sustainable redevelopment. Brownfield land redevelopment was increasing rapidly, given the government incentives that were available. I recall feeling uneasy about the concept of “garden grabbing”, which at that time qualified for such incentives. I began to notice the difference between what I considered to be true sustainable development projects versus those that were not.

How did you get your first role?

I organised some work placements to better understand the various stakeholder organisations and decide on the best fit. I'm a natural problem-solver and love a challenge so consultancy quickly became the logical choice!

How did you progress your environment/sustainability career? Mainly through further education, maintaining a wide base of contacts, and paying attention to my professional relationships. I believe this has helped me stay current in a fast-paced industry. As I progressed, I grew interested in quantitative risk assessments to support the case for minimal remediation and hence reduce the landfill burden. I also changed roles to broaden my experience and began advising on the clean-up of environmental incidents. This really opened my eyes to the ethical dilemmas that presented themselves in this type of work.

What does your current role involve? I work for a large multidisciplinary consultancy where my day-to-day role is diverse and varies according to the client brief. I am presently managing several large projects and am responsible for specialist input into others, as well as being actively involved in business development and staff mentoring.

How has your role changed over the past few years? As well as progressing technically, my role has expanded to include managerial and business development aspects. I'm now also involved in assisting junior members of staff with their training and support, including advice on non-technical issues, such as handling difficult situations.

What's the best part of your work? Problem-solving, especially when it requires multidisciplinary involvement to reach a positive solution. Whether this is assessment of an ecologically sensitive site or assisting with reuse of materials, I'm always looking for the best way to solve potential problems.

What's the hardest part of your job? Juggling lots of projects and demands on my time can be a challenge, but it makes life more interesting!

What was the last development/training course/event you attended? An online legislative update – I really value online courses but I do enjoy meeting people so I try to attend as many face-to-face, instructor-led courses as I can. Parsons Brinckerhoff supports internal knowledge sharing and organises lunchtime mini-seminars, which are really useful. I recently led one on reusing materials in construction projects.

What is/are the most important skill(s) for your role and why?

A proactive approach is essential, as are good communication and people skills. Consultants have to be able to analyse details and question assumptions, but also step back and appreciate the bigger picture.

Where do you see the profession going? The number of sustainability professionals will continue to grow, and we will see sustainability being fully integrated into company strategy.

Where would you like to be in five years' time? I hope to be operating in a leadership capacity: providing good support to less experienced staff, building a team, and watching others grow and develop.

What advice would you give to someone entering the profession?

Seize opportunities and get to know as many people as possible. Talk to them, learn about what they do and remain engaged and enthusiastic. While technical skills are certainly important, you don't have to be the most technical, well-qualified person to make a good project manager and consultant.

How do you use IEMA's environmental skills map?

The map has aided my personal career planning by allowing me to target where I want to be and track my development. It's a really useful reference tool.

Readers' end of year quiz

1. EU emissions trading system allowances. The European commission plans to withhold 900,000 allowances.
2. The UK.
3. Drax power station, Yorkshire. It is converting to biomass feedstock.
4. Most fail to disclose the value of those risks.
5. Sentencing guidelines, which came into force in July for England and Wales.
6. Moving the Environment Agency's website to gov.uk has been heavily criticised by practitioners, who have found it hard to find information that was previously available.
7. Oxford Street in London.
8. The revised EIA Directive. Member states have been given three years to transpose it into domestic legislation.
9. Rolls-Royce, the aero engine company, for the continued use of bis(2-ethylhexyl) phthalate.
10. Waste transfer notes, with the introduction by the edoc scheme.
11. Scotland, from 1 October 2014.
12. 100,000 pages of environmental guidance by Defra.

13. China for 14001 (91,590 in 2012); Germany for 50001 (1,115 in 2012) – according to the latest figures from ISO.
14. A tonne of carbon under the carbon price floor.
15. Paris, after levels of PM10 reached double the safe limit.
16. Brazil, France, Greece, Portugal, the USA, Australia, South Korea, Croatia, England and Holland. Each Nike kit contains 13 recycled bottles.
17. Tokyo, London and New York.
18. Telecoms giant BT.
19. The Allianz Arena, home of German football champions Bayern Munich.
20. Asda, owned by US retailer Walmart.
21. The tunnel boring machines used on the Crossrail project, linking Heathrow and Reading in the west with Abbey Wood and Shenfield in the east.
22. Just five, with three – London, Leeds and parts of the west Midlands – not expected to be comply until 2030.
23. More efficient use of resources, according to the European commission.
24. Small particle climate pollutants, such as methane, hydrocarbons,

chlorofluorocarbons, tropospheric ozone and dirty particulates.

25. The EIA screening thresholds in England for industrial estate schemes and urban projects.
26. The Rockefeller Brothers Fund, which was set up by Standard Oil tycoon John D Rockefeller. It is shifting \$50 billion from fossil fuels to clean energy technologies.
27. Oil company BP.
28. One tonne of carbon offset, according to research by the International Carbon Reduction and Offset Alliance.
29. Successful exploitation of the country's estimated shale gas reserves, according to the trade body, UK Onshore Oil and Gas.
30. Miguel Arias Canete and Karmenu Vella.
31. Coal.
32. 42%.
33. Flooding, biodiversity and air quality.
34. Lost or degraded forests and agricultural land.
35. Former environment secretary Owen Paterson; speaking at the Global Warming Policy Foundation.

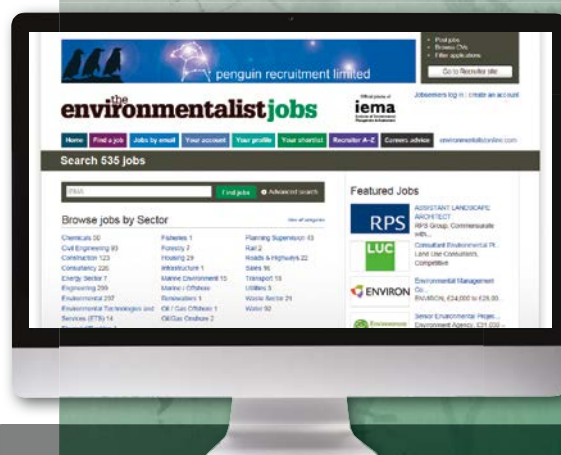
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Shirley Parsons in the USA!

We are excited to announce the launch of our new US business, operating out of Boston, MA! Please get in touch if you are eligible to work in the USA or if you are looking to hire US based staff.



Get in contact

For more information regarding any of these opportunities or to apply please call 01296 611322 or email response@shirleyparsons.com



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Group Sustainability Manager

WARWICKSHIRE £60-70K + CAR L06199

A leading UK house builder is currently recruiting for a new Group Sustainability Manager. Reporting to the Group Health, Safety, and Sustainability Director, this a fantastic opportunity for candidates with a strong sustainability background in the construction industry. The successful candidate will be responsible for driving both group and divisional sustainability agenda.

Environmental Advisor

KENT c£35K LT6184

A global food processing company is looking to appoint an Environmental Advisor to their operation based near Dartford in Kent. The role will be working on a high-risk facility, where you will be responsible for driving the development of the HSE culture and SSOW. Candidates must have had previous exposure to a manufacturing environment and a recognised environmental qualification is essential.

Regional Sustainability Manager

MANCHESTER £38K + CAR L06121

An international construction services company is currently recruiting for a Regional Sustainability Manager. Within this role, you will provide sustainability expertise to the project teams in order to support the long term vision of the company. Candidates must have experience and understanding of environmental legislation within the construction industry and knowledge of ISO14001.

Environmental Advisor

LONDON £33-35K + CAR ALLOWANCE + BENEFITS L06111

A leading construction contractor is currently looking to recruit an Environmental Advisor to provide environmental support on a major rail project in London. You will assist with environmental risk assessments and investigation of incidents. Candidates must have an environmental related degree and a minimum of three years environmental experience.

Environmental Advisor

WALES £30-35K + CAR L06025

A leading civil engineering company are currently recruiting for a high calibre Environmental Advisor. This role will see you establish, implement and maintain the environmental management system and will also see you take the role of CEEQUAL assessor across the project. Candidates must have an IEMA membership, 3 years' environmental management experience and a relevant environmental degree – 2:1 minimum.

Environmental Advisor

LONDON £NEG L06156

A major construction company with a strong pipeline of work currently has a requirement for an Environmental Advisor. Providing environmental advice across the site, you will liaise with stakeholders and regulators to ensure that environmental risk is managed. Candidates must have a thorough knowledge of environmental management systems and also 1 years' environmental experience.

I am pleased to announce the continued growth of our Environmental Division and introduce you to our newest team members, Tom Nicholls and Lucy Pereira.

Whilst Shirley Parsons Associates has always worked with environmental professionals, I was asked to join in July 2013 to help develop this division further. Over the last year, I am pleased to say that our Environmental Division has gone from strength to strength, providing Environmental and Sustainability Recruitment across all sectors from Graduate to Director level.

Due to the increased demand we have experienced from our clients, Tom and Lucy have joined me to help even more Environmental and Sustainability professionals make their next career move. We welcome conversations with anyone involved in the sector, so please get in touch, we'd be happy to help.

Thanks, Lisa

You can contact Lisa on 01296 611338, Tom on 01296 611321 and Lucy on 01296 611308.

www.shirleyparsons.com



Looking for a Sustainable Career...?

Sustainability Consultant Abingdon

£Dependent on experience

We are looking for a Sustainability Consultant to join the Team in our Oxford office, based on Milton Park in Abingdon.

The role is to join the Sustainability Team, working on BREEAM Assessments, Sustainability Statements and CSR projects for a wide range of construction/property developer clients.

You will need to hold a degree in a relevant discipline and, ideally, have 1-2 years' experience as a registered BREEAM Assessor (or have worked in support of a BREEAM Assessor) and have some experience in delivering BREEAM Assessments. You will also need to have excellent communication skills - both written and verbal - and have strong Excel skills. Finally, a good awareness of relevant environmental legislation and guidance is required for this role. Knowledge and experience in environmental management and sustainable construction would be preferable.

In return, we offer a very competitive salary and benefits package, together with the opportunity to develop your career with one of the UK's leading environmental consultancies.

To apply, or for more information, contact our Recruitment Manager, Geoff Thorpe via e-mail at geoff.thorpe@rpsgroup.com

No Agencies Please

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Our Company

RPS is a leading multi-disciplinary consultancy with the expertise to support clients through the development process, from planning to design to implementation.

We are acknowledged as experts in planning, transport, landscape and environmental consultancy and we are award winning architects, civil, structural and mechanical and electrical engineers.

RPS has grown into one of the world's pre-eminent consultancies by maintaining its local connections whilst underpinning these with the resources and knowledge of a global business.

We employ 5,000 people in the UK, Ireland, the Netherlands, the United States, Canada, Brazil, Africa, the Middle East, Australia and Asia. Our international presence allows us to undertake co-ordinated and integrated projects throughout the world.



COUNTDOWN TO ESOS COMPLIANCE

The ESOS clock is ticking. Affected organisations must comply with this mandatory UK government scheme before the first deadline on 5th December 2015.

Join one of our ESOS Countdown Webinars to find out all you need to know from experts, including:

ESOS compliance requirements

Jo Scully, Environment Agency ESOS Project Manager

Compliance through ISO 50001 at Northern Rail

Richard Walsh, ISO 50001 Assessor, NQA

A balanced view of all routes to ESOS compliance

Kit Oung, Energy Managers Association.

Register now at www.nqa.com/esos

ESOS Countdown Webinars

Friday 5th December

8.30 - 9.30am and

12.30 - 1.30pm



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