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New software and apps for smartphones and tablets can help companies to manage data if they follow some basic rules. Bridget Leathley reports

Lis Stedman discovers how large consumers – laundry business Berendsen, beer producer Heineken and hotel owner Whitbread – are reducing water use

Paul Suff talks to those assessing the environmental effects of the planned high-speed rail line between Birmingham and London about the challenges

In our second examination of ESOS, Maxine Perella gets advice from experts on how businesses can generate the maximum benefits from the scheme

Jiggy Lloyd explains why the Bank of England looked to what ecologists know about an interdependent world to understand the finance sector

Peter Laybourn, chief executive at Industrial Synergies, outlines how the National Industrial Symbiosis Programme is being embraced worldwide

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The value of everything

The global mountain of waste electrical and electronic equipment (WEEE) is growing by about 50 million tonnes a year as consumers scrap old smartphones, laptops, televisions and solar panels for newer ones. These devices contain many valuable resources, including gold and silver. New research by the University of Sheffield (p.5) estimates that, by 2020, the value of recyclable WEEE in Europe could reach €3.6 billion.

Realising all that value depends on collecting unwanted devices and equipment. Recycling rates for WEEE are steadily improving. In the UK, 35.4% of household and non-household WEEE (as a proportion of new electrical and electronic equipment placed on the market) was collected in 2012 compared with 34.4% in 2011. However, an estimated 37%, about 590,000 tonnes, of all used electrical and electronic equipment in the UK still goes to landfill. The European commission says that just one-third of WEEE in the EU is currently being reported by compliance schemes as collected separately and managed appropriately. Some of the remainder is improperly treated or illegally exported abroad or disposed of as part of residual waste in landfills or incinerators. The recast WEEE Directive (2012/19/EU) sets new, higher targets from 2016 to 2019. It requires most member states – newer members have longer to comply – to recover 45 tonnes of e-waste for every 100 tonnes of electronic goods sold by 2016, rising to 65% of sales by 2019 or 85% of all e-waste generated.

Europe and the UK lack enough capacity to properly deal with the amount of WEEE being generated, while it is not always cost-effective for recyclers to recover the materials

But WEEE collection is only part of the solution. If the resources contained in unwanted electrical and electronic equipment are to enter the secondary material market the original products need to be disassembled efficiently and safely. Europe and the UK lack enough capacity to properly deal with the amount of WEEE being generated, while the technologies and business models used by recyclers and treatment centres mean it is sometimes not cost-effective to extract the materials. Manufacturers' growing use of high-tech plastics and compounds or rare earths, often in very small amounts, have made recovery of materials with a high degree of purity uneconomic. Designing electrical and electronic equipment with ease of disassembly and recovery in mind should therefore be a priority for all producers. Also, designing them to last longer and to be easily repairable, as urged recently by the Green Alliance, would encourage reuse and prevent them being discarded, and possibly being illegally exported to countries where they might damage human health and the environment. Product design should be at the heart of the European commission's circular economy package, due at the end of the year.

Paul Suff, editor

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Short cuts

New Chinese CO_2 data

China's carbon emissions are lower than previously thought, according to academics led by the University of East Anglia. In a paper published in *Nature*, the researchers say that China produced 2.9 gigatonnes less carbon between 2000 and 2013 than estimated. The team, which included academics from Harvard University and the Chinese Academy of Sciences, re-evaluated emissions from fossil fuels and cement production from 1950 to 2013 using independently assessed data. They also used new measurements of emissions factors for Chinese coal, which is typically lower quality and has a lower carbon content compared with that burned in the US and Europe. The emissions factors were found to be 40% lower than the default levels reported in other assessments of China's carbon emissions, including the IPCC fifth assessment report (AR5). Professor Corinne Le Quéré, director of the Tyndall Centre for climate change research at UEA, said Chinese data has many uncertainties, in particular discrepancies between national and provincial figures. "As we refine our estimates we can improve our climate projections and better inform policy on climate," she said.

Bee decline in England

The declining number of bee and wasp species in England is linked to historic changes in land use, according to research published in *Proceedings of the Royal Society*. Researchers at the University of Reading used digitised land-cover maps of 14 sites from the 1930s and historical data on pollinating insects to identify shifts in land use with the impact of these changes on the species' richness and diversity. The researchers compared land-cover changes at each site, and the surrounding landscape, and changes in the composition of bee and wasp communities. They found a decline in the number of bee and wasp species over the past 80 years at 11 of the sites and concluded that changes in land use were driving the losses.

US aims to clean up power

Measures to cut carbon emissions from power stations in the US by almost one-third below 2005 levels by 2030 have been announced by president Barack Obama.

Power stations in the US account for one-third of the country's carbon emissions and the Environmental Protection Agency's Clean power plan will cut these by 32% or 870 million tonnes by 2030 compared with 2005. The plan will also reduce by 2030 emissions of sulphur dioxide and nitrogen oxides from power plants by 90% and 72% respectively compared with 2005.

The plan has been revised since a draft was published last year. The agency said the final plan would cut 70 million tonnes more of carbon than the previous proposal. "The valuable feedback we received means the final plan is more ambitious yet more achievable, so states can customise plans to achieve their goals in ways that make sense for their communities, businesses and utilities," said agency administrator Gina McCarthy.

The plan sets uniform carbon pollution standards for power plants across the country, but sets individual state goals based on their current energy mix and their opportunities to cut pollution. The agency said this flexibility would enable states to run their more efficient plants more often, switch to cleaner fuels, use more renewable energy, and take advantage of emissions trading and energy-efficiency options. Under the plan, carbon reductions can begin now, and each state needs to hit its interim target by 2022 and its final target by 2030. The 2022 deadline for achieving mandatory emission reduction targets is two years later than that set in the draft. The agency said the extension would give utilities more time to make investments and upgrades.

Image: REX

The agency estimates that, by 2030, the net public health and climate-related financial benefits from the plan will be worth $45 billion a year.

Pledges not enough to meet 2°C target

Emissions reduction pledges made ahead of the Paris summit will fail to keep global temperature rise below the 2°C level scientists believe is necessary to avoid dangerous climate change, according to a study.

The research, which updates earlier estimates, assessed the intended national determined contributions (INDCs) that 46 countries had submitted to the UNFCCC by 20 July 2015. These include China, the 28 EU member states, Japan, Mexico and the US, and account for 58% of global greenhouse-gas emissions. The researchers from the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science found the pledges would lead to annual global emissions in 2030 of 56.9 to 59.1 billion tonnes of carbon dioxide equivalent (tCO2eq). Although this much less than the current business-as-usual pathway, on which emissions reach 68 billion tCO2eq by 2030, it is much higher than the 36 billion tCO2eq that UNEP has calculated would be consistent with a 50% to 66% chance of avoiding a rise in global average temperature of more than 2°C above the pre-industrial level.

The pledges also fall well short of the target of 42 billion tCO2eq for a pathway that avoids the temperature limit by using technologies that create "negative emissions", such as bioenergy with carbon capture and storage.

The authors, Rodney Boyd, Joe Cranston Turner and Bob Ward, say countries need to find further credible ways over the next few months of achieving bigger emissions reductions, which they can include in their INDCs. They are also calling for any agreement at COP21 in Paris to include a mechanism to allow countries to review their efforts and to find ways of ramping up the ambition of their emissions reductions by 2030 and beyond.

Success of new UN sustainable development goals rely on Paris

Climate change and poverty campaigners are looking to a high-level meeting in September to act on new global sustainable development goals (SDGs).

The 17 goals and 169 targets were agreed by 193 UN member states, and include action to both mitigate and adapt to climate change, moves that have been hailed by campaigners.

Some countries had resisted the inclusion of climate change, arguing that it should be tackled through the UNFCCC process, according to David Taylor, economic justice policy adviser for Oxfam. "It would have been a disaster if it was not included. It's such a huge development issue," he said. Pat Lerner, Greenpeace senior political adviser, said: "For the first time, the world has acknowledged that these problems can't be dealt with in isolation."

The goals also include a pledge to conserve marine resources, as well as sustainably manage forests, stop desertification, and halt land degradation and biodiversity loss. The agreement states: "We recognise that social and economic development depends on the sustainable management of our planet's natural resources."

The SDGs follow on from the millennium development goals, which

Image: Auscape / UIG/REX

expire this year, but differ in so far as they cover all peoples in every country, rather than just in developing nations. The 2015 goals were drawn up after a two-year global consultation process, involving all sections of society. However, they are not legally binding and will rely on signatory states producing action plans to achieve the goals in their own country and through development aid to others.

The environmental goals in particular still rely heavily on UNFCCC negotiations in Paris, Lerner warned. "The goals will mean nothing if governments in Paris don't sign up to switch to 100% renewable energy by 2050," she said. Once the agreement on the SDGs is ratified by heads of state at a UN meeting in September, work will begin on developing indicators to measure progress.

WEEE worth €3.6 billion by 2020

The value of recyclable waste electrical and electronic equipment could reach €3.6 billion in Europe by 2020, according to research by the University of Sheffield.

The researchers say between 30 and 50 million tonnes of WEEE is discarded globally each year and that the annual volume of e-waste is expected to increase by up to 5% as consumers replace old products with newer ones. Popular electrical products, such as smartphones and tablets, contain precious materials, including gold, copper, palladium, silver, platinum and cobalt.

Lenny Koh and colleagues at the university's Advanced Resource Efficiency Centre developed a methodology to help organisations identify key materials in 14 products, including LCD and LED notebooks, televisions, mobile phones and solar panels. The information can be used by companies to prioritise investment in materials recovery based on various factors, such as the amount of materials that are available in waste streams, their material composition, the price volatility of recovered materials and degree of purity required.

"This research will play a critical role in improving society and the world in terms of reducing waste, improving recycling, reducing reliance on natural, rare earth and precious materials, and improving resource efficiency and circular economy in key manufacturing processes where we rely on these materials," said Koh.

She said that, as demand for many of the scarce resources used in electrical products continues to rise, industry would be left with little choice but to capture recycled materials for manufacturing and meet the demand for their new products.

Short cuts

Sustainability refocus

Manufacturers' body EEF is to refocus its environmental service to incorporate a wider sustainability agenda and has appointed James Wyse to a new role of national sustainability lead. Wyse, previously a climate and environment consultant at the organisation, said that the new service would be much more outward-facing and consider longer-term issues to help manufacturers focus on upcoming challenges, such as the high cost of resources. Many EEF members are starting to think in this way, but others do not have a dedicated resource since responsibility for environment was often combined with health and safety, he said. "It's these that we need to equip so that they look at issues outside their organisation rather than just within it," he said. The trade body is planning new courses on sustainability and ways to support organisations to become certified under the revised ISO 14001 standard. "An EMS is not just for managing a piece of waste out of the door; it presents opportunities," Wyse said.

Water footprinting

The Carbon Trust is seeking organisations to act as "pathfinders" for its new product water footprint certification and labelling scheme. It is designed to help businesses demonstrate leadership in sustainability by certifying the lifecycle water use of their products. They will also be able attach the trust's water footprint label to the products. The trust said businesses were key to solving water challenges and footprinting would help businesses to better understand the lifecycle sustainability impacts of their products, uncovering hotspots such as pollution or competing demands in areas of water stress and scarcity. "Understanding a full lifecycle water footprint can help to focus efforts on reducing the most significant environmental impacts of products. But it also makes good business sense to highlight areas of unforeseen risk and cost-saving opportunity," said Darran Messem, managing director of certification at the trust.

Short cuts

Household waste rises

Increasing household waste will place a burden on dwindling finances of local authorities at a time when further budget cuts are expected, according to local authority recycling officers. Waste generated by households rose by 3.7% in 2014, according to data from the environment department (Defra). The local authority recycling advisory committee (Larac) has called on the government and the wider industry to support councils with household waste minimisation. Sally Talbot, vice chair of Larac, said: "Local authorities have done sterling work in this area but it is time to recognise that there is only so much we can do." The data also showed a rise in the household recycling rate from 44.2% in 2013 to 44.8% in 2014. Waste trade body the Environmental Services Association pointed out that three-quarters of the improvement came from higher rates of recycling from organics such as garden waste. These services are at risk from local authority budget cuts, said Jacob Hayler, executive director at the association.

Supporting football

Fans going to matches this season will be able to find the most sustainable mode of travel after the Football League teamed up with the online car-sharing site, Liftshare, to create the "Get to the game" travel platform. It provides fans with all the public transport options to any match as well as access to Liftshare to find other fans travelling their way. Car drivers can also post details of their matchday travel and offer spare seats to other fans for a split of the total fuel spend to keep costs down. Fans can request and pre-book lifts to or from a match with those driving to the game. Alerts to smartphones notify registered members when a suitable journey is posted in their area. Ali Clabburn, founder and chief executive at Liftshare, said: "It gives supporters a rare chance to help their favourite team do its part for the environment. We want to help fans save one million car miles and save £100,000 each week."

Disclosure brings better loans

Sustainable businesses benefit from a significantly lower cost of capital, according to academics. A study by Maastricht University and the University of Oxford looked at whether firms that choose to voluntarily disclose their CO_2 emissions enjoy more favourable lending conditions.

Researchers compared environmental reporting data from the CDP (formerly the Carbon Disclosure Project) with company loan information from the Thomson Reuters database Dealscan for businesses in 87 countries. The analysis found that transparent businesses are given more favourable interest rates than those that fail to disclose. Companies borrowing money and which fully disclosed their emissions to the CDP were given an average loan spread of 179.7 basis points (bps), the academics found. This compared with average loan spreads of 214.4bps for firms that disclosed some, but not all, information; 224.7bps for companies that did not respond to the CDP's survey; and average spreads of 235.6bps for those that declined to participate. Firms that provide full disclosure save $1.5 million a year on average in interest costs, the study found.

The research also considered the impact of emissions by companies on borrowing costs. This found only a weak link between

Image: Cultura/REX

scope 1, or direct, CO_2 emissions and the cost of loans. However, signatories to the CDP from the finance sector imposed higher interest rates on companies with high CO_2 emissions. The researchers studied 1,029 loans and found that a 1% increase in scope 1 CO_2 emissions resulted in an increase of $1.3 million a year in interest costs. Firms can make substantial cash savings by limiting their CO_2 emissions relative to industry peers if they borrow from investors that have signed up to the CDP, the study concluded.

James Hulse, CDP's head of investor initiatives, said: "This study examines a vital and hitherto missing component, which implies that investors are directly favouring lower-emitting companies with access to cheaper finance."

Shale gas threat to SSSIs

Licences for onshore oil and gas drilling have been announced for 27 blocks of land, which include more than 50 sites of special scientific interest (SSSI) and three RSPB reserves. The Oil and Gas Authority (OGA) has formally offered the blocks to companies that want to exploit both conventional and unconventional deposits of oil and gas through fracking.

The blocks, typically 10km^2, do not contain any sites designated under European conservation regulations so avoid detailed assessments under the habitats regulations, the OGA said. In June, the government reneged on a pledge to protect SSSIs from fracking and the blocks offered by the OGA contain 53 such sites, according to analysis by the RSPB. "This sends a worrying signal about what the government thinks of the importance of SSSIs. We think they should be ranked at the same level as areas of outstanding natural beauty and national parks," said Matt Williams, climate change policy officer at the conservation body.

The OGA has launched a consultation on a further 132 blocks located in conservation sites. These have been ranked according to the impact that activities associated with oil and gas exploration and production could have. If a risk of potential damage to a site has been identified, developers will not be allowed to explore or drill at or near the surface. However, these activities could take place underground, the OGA said. Proposed locations include around 300km^2 of the North York Moors, 75km^2 of the Peak District and a small area in the South Downs, according to Greenpeace.

In total, the government received 95 licence applications for 295 blocks in England, Scotland and Wales. It took forward applications for 159 of these after geotechnical reviews and scrutiny of operators.

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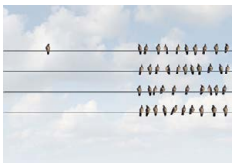

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Business plans

Molson Coors has published a progress report on achieving its 2020 sustainability goals, which include zero waste to landfill, a 25% reduction in energy consumption and a 15% cut in both carbon and water intensity. The company, whose brands include Carling and Staropramen, said that, in 2014, energy use declined 3.4%, CO_2 emissions fell 2.4% (7,700 tonnes), and water consumption was reduced by 3.3%. Some 26% and 53% of the 2020 target for energy and carbon reductions respectively have been achieved already.

Coca-Cola has reported that in 2014 it replenished an estimated 94% (153.6 billion litres) of the equivalent amount of water used in its finished beverages worldwide (based on 2014 sales volume). Better management of water resources is one of the soft drinks company's key sustainability objectives.

Confectionery business **Mars** has reduced water use from its operations by 15% and cut GHG emissions by 5% since 2007. The company also reports that it sent 80% less waste to landfill in 2014 than in 2007, and that more than 66% of its manufacturing sites now send zero waste to landfill. Mars launched its sustainable-in-a-generation initiative in 2007, which commits it to eliminating fossil fuel use and GHG emissions from its operations by 2040.

Dutch electrical and electronics company **Philips** has opened its GrowWise farming research centre at the company's campus in Eindhoven. It will test tailor-made LED "light growth recipes" on different crops – from leafy vegetables to strawberries – to identify the best kind of light each one requires to generate a high-quality yield.

Logistics business **UPS** increased the number of vehicles in its fleet powered by alternative fuels and advanced technology by 61% in 2014 (more than 5,000) compared with 2013. According to UPS, the number of miles driven by alternatively fuelled vehicles totalled 154 million in 2014, almost three times that in 2013.

Argos has launched a service in partnership with **Wrap** to enable shoppers to trade in unwanted electrical and electronic gadgets at its 788 UK stores. The items will be refurbished in the UK and resold.

Gains from FSC certification

Companies with Forest Stewardship Council certification can earn significantly more from their wood than those without, a study by WWF has found.

The research, covering 11 companies in seven countries, explored the economic case for forest operators to adopt FSC certification and for financiers to prefer it. Companies with certification earned an extra $1.80 for every cubic metre of roundwood or equivalent, over and above costs associated with certification, it found.

The financial benefit was mainly through price premiums on FSC-certified wood and increased efficiency, WWF said. Results varied significantly by company size and geography, with small and medium-sized enterprises, and those in tropical regions showing financial gains. Large producers and those in temperate regions experienced small losses. It took companies six years on average to break even on investing in certification, the research revealed.

"This study shows that, while the investment costs of entering into an FSC certification process can be considerable, for tropical forest operators and small or medium enterprises the investment can be good for the bottom line," said Rod Taylor, director of WWF's global forests programme. The methodology used by WWF can be applied by other companies to calculate what they could gain from certification, he added.

Image: FLPA/REX

Meanwhile, the UN environment programme (UNEP) has unveiled a new lending and investment policy tool for financial institutions aimed at reducing the deforestation risk caused by unsustainable production, trade, processing and retail of commodities such as soy, palm oil and beef. The development of the tool follows research by UNEP which found that the majority of financial institutions did not have policies that explicitly require clients to comply with applicable local, national and international laws and regulations related to forest conservation.

Agency to amend standard rules

The Environment Agency is to press ahead with planned amendments to some of the rules for standard permits issued under the Environmental Permitting (England and Wales) Regulations 2010. It follows its consultation on the proposals.

The changes relate to five sets of proposals covering: asbestos waste transfer operations; fire prevention plans for sites storing combustible wastes; civic amenity sites and metal recycling facilities; metal recycling and waste electrical and electronic equipment (WEEE) treatment activities; and amendments to 12 rules required by the introduction of the Industrial Emissions Directive (IED).

The agency said it would implement the proposals set out in the consultation, which ended in March 2015. However, it may consult further on provisions relating to the processing of incinerator bottom ash (IBA) and pulverised fuel ash (PFA) required by the IED after some respondents said the proposals favoured IBA. The agency said it was willing to consider a specific standard rules permit to cover PFA if there was enough demand, and industry was prepared to contribute to its development.

All respondents supported the proposal for a fire prevention plan, which is aimed at reducing the number of fires at waste sites. The agency said a new condition would be inserted into 21 sets of standard rules that deal with combustible wastes to bring in this requirement. Limits will also be set on storage time for some waste.

Changes to rules governing asbestos waste include allowing larger waste items to be received wrapped by waste site operations. The agency said the proposals covering metal recycling and WEEE treatment activities would proceed as planned, although it would also adopt minor points of clarification raised by consultation respondents.

In court

Court backs greater transparency over breaches of EU law

The Court of Justice of the EU (CJEU) has ruled that the public have the right to know whether their government is breaking environmental law.

The European commission currently does not make public the outcome of studies to determine whether member states are correctly implementing legislation to protect human health and the environment. Environmental law NGO ClientEarth challenged this policy in the courts, arguing that the Aarhus Convention on access to environmental information, which the EU signed nearly 20 years ago, requires the studies to be available.

ClientEarth first applied to see the studies in 2010 and the commission released some, generally those revealing minor breaches of law by member states. However, it withheld information on major infractions, mainly those that would require legal action by the commission and which relate mostly to waste and water. In 2013, the EU General Court (GC) backed the commission's policy of keeping studies confidential because they formed part of authorities' investigations into breaches of legislation. ClientEarth appealed and the CJEU has sent the case back to the GC.

The GC will now examine some studies and decide whether the commission's demand for confidentiality is founded. ClientEarth says it expects the results in late 2015 or early 2016. The ruling in support of greater transparency does not stretch to studies that resulted in infringement proceedings against a member state, however. Anaïs Berthier, a lawyer at the NGO, warned: "This means the worst law-breaking by EU governments risks being kept confidential, and the infringement proceedings remain completely opaque. Negotiations can go on for years behind closed doors, denying people the right to hold governments to account when they break environmental laws."

Online trader breaks three regimes

Online shopping company Babz Media has been fined £45,500 for failing to comply with the producer responsibility rules on packaging, batteries and electrical and electronic equipment. It is the first time a firm in the UK has been prosecuted for breaching all three regimes.

The west London-based company, which sells electrical cables, blank media and batteries through online marketplaces, pleaded guilty at Ealing magistrates' court for failing to register with the Environment Agency and a producer recycling scheme for its packaging waste, waste batteries and electrical waste between 2011 and 2014. The firm also pleaded guilty to avoiding the costs of collecting and recycling the three waste streams between 2011 and 2013.

The agency said Babz Media had imported 163.7 tonnes of batteries between 2011 and 2013, and 188 tonnes of electrical equipment in 2012 and 2013. It was also obligated under the Producer Responsibility Obligations (Packaging Waste) Regulations 2007 to recycle 76 tonnes of packaging waste in 2013.

Hannah Wooldridge, senior officer at the agency, said: "Online trading does not excuse companies from being compliant with the law. This company didn't meet their legal obligations through ignorance after starting trading. It remained non-compliant for over three years and that impacted others in the market due to the commercial advantage it had."

As well as the fine, Babz Media was ordered to pay the agency £8,725 to cover the avoided registration fees and the regulator's prosecution costs.

Cheese spread infringes permit

A cheese factory and its owner and manager have been ordered to pay £30,680 in fines and costs for polluting a stream, illegally damming another stream and breaching an environmental permit. Devon-based Parkham Farms, which produces around 4,000 tonnes of Cheddar cheese a year, and Peter Willes and Richard Marsden, who also run a farming partnership, pleaded guilty to allowing slurry to pollute a watercourse at a farm near Bideford; constructing an illegal dam in a stream near Hartland; and spreading waste from the factory on land in breach of a condition of the site's environmental permit.

Case law

Impact of a project on a surface water body

The Court of Justice of the EU has delivered a preliminary ruling on the interpretation of art.4(1)(a)(i) to (iii) of the Water Framework Directive (2000/60/EC) in the case of *Bund für Umwelt und Naturschutz Deutschland eV v Bundesrepublik Deutschland*.

The case concerned planning approval for three projects that involved dredging the River Weser to enable larger container vessels to call at German ports. As well as the direct effects of dredging and discharging dredged material, the projects had other hydrological and morphological consequences for the river. The key issues were: whether the objective in art.4(1)(a) to prevent the deterioration of the status of a surface water body applies to the authorisation procedure for individual projects; and when "deterioration in the status" of a surface water body occurs.

The court ruled that, unless a derogation is granted, member states are required to refuse authorisation for a project where it may result in the deterioration of the status of a water body or jeopardise the attainment of good surface water status. The circumstances when a project may have such an impact are unclear, although in an earlier the judgment the court said that a member state is required to refuse a project "where it is such as to result in" a deterioration of the status of the water body. This suggests a more definite impact is required.

In relation to the second issue, the court ruled that the deterioration of a water body occurs as soon as the status of at least one of the quality elements (such as macroinvertebrates, aquatic flora or fish) – falls by one class – good to moderate or moderate to poor, for example.

Hayley Tam

Lexis®PSL

New regulations

Waterman

In force	Subject	Details
20 May 2015	Noise	Directive 2015/996 establishes a common method to assess and manage environmental noise in accordance with Directive 2002/49/EC. The method ensures that information on environmental noise and its effects are made available to the public, and that action plans are adopted to prevent and reduce environmental noise particularly where exposure levels can induce harmful effects on human health. lexisurl.com/iema105218
1 Jun 2015	Hazardous substances	The Hazardous Waste (Amendment) Regulations (Northern Ireland) 2015 amend five items of waste legislation to reflect changes to the European list of wastes. lexisurl.com/iema96584
4 Jun/8 Jun 2015	Ecolabels	European commission decision 2015/877 extends until 31 December 2018 the validity of ecological criteria for the award of the EU ecolabels for tissue paper, copying and graphic paper, lubricants, newsprint and printed paper. Decision 2015/886 amends 2014/312/EU to extend from 12 to 21 months EU ecolabel licences for indoor and outdoor paints and varnishes. lexisurl.com/iema102190; lexisurl.com/iema102191
8 Jun 2015	Emissions	The Carbon Accounting Scheme (Scotland) Amendment Regulations 2015 amend the 2010 regulations by revising methods to determine whether carbon units are to be credited or debited from the 2013 net Scottish emissions account under the EU emissions trading system. lexisurl.com/iema96593
8 Jun 2015	Hazardous substances	The Waste (Meaning of Hazardous Waste and European Waste Catalogue) (Miscellaneous Amendments) (Scotland) Regulations 2015 amend 11 items of waste legislation to reflect the changes to the European list of wastes. lexisurl.com/iema96597
25 Jun 2015	Hazardous substances	EU Regulation 2015/864 amends 340/2008 regarding the fees and charges paid to the European Chemicals Agency (ECHA) under the REACH Regulation 1907/2006. lexisurl.com/iema102189
27 Jun 2015	Climate change	The Financial Assistance for Environmental Purposes (Scotland) Order 2015 adds the low-carbon infrastructure transition programme to the list to which Scottish ministers may provide financial assistance under the Environmental Protection Act 1990. lexisurl.com/iema102183
30 Jun 2015	Energy	The Swansea Bay Tidal Generating Station Order 2015 grants development consent for a tidal lagoon generating station. lexisurl.com/iema102187
1 Jul 2015	Built environment	The Building (Scotland) Amendment Regulations 2015 reduce from 1 July 2015 the minimum floor area in buildings requiring display energy certificates to 250m². lexisurl.com/iema102180
1 Jul 2015 (1 Jan 2016)	Energy	The Ecodesign for Energy-Related Products and Energy Information (Amendment) Regulations 2015 amend the 2010 Regulations to support the introduction of mandatory energy performance standards for small, medium and large power transformers (from 1 July 2015) and ventilation units (from 1 January 2016). The Energy Information Regulations 2011 are amended from 1 January 2016 to impose energy labelling requirements for residential ventilation units. lexisurl.com/iema67645
1 Jul 2015	Marine environment	EU Regulation 2015/757 requires the monitoring and reporting of CO_2 emissions from ships arriving or departing ports in the EU. Companies are required to monitor and report on qualifying CO_2 emissions during each annual reporting period from 1 January 2018. lexisurl.com/iema96603
1 Jul 2015	Hazardous substances	The Biocidal Products (Fees and Charges) Regulations (Northern Ireland) 2015 support the implementation of the EU Regulation 528/2012 on the marketing and use of biocidal products. They also replace the 2013 domestic regulations. lexisurl.com/iema96587

This legislative update has been provided by Waterman's Legal Register available at legalregister.co.uk

Latest consultations

21 Sep 2015
Waste duty of care

Defra and the Welsh government are seeking feedback on a revised waste duty of care code of practice. The duty of care is a legal requirement for those dealing with certain kinds of waste to take all reasonable steps to keep it safe (s.34 of the Environmental Protection Act 1990), while a code of practice is a statement of practice, offering guidance rather than imposing legal requirements. The current code was introduced in 1996 and does not reflect subsequent legal developments, says the consultation document.
lexisurl.com/iema105357

24 Sep 2015
Oil storage

Draft Prevention of Pollution (Oil Storage) (Wales) Regulations have been issued for consultation by the Welsh government. The principal requirement will be for secondary containment to prevent any leaks from an oil storage facility escaping into the wider environment. This would apply to all new oil storage facilities from the date the regulations come in to force, which is expected to be early in 2016. Existing domestic oil storage facilities will remain exempt until replaced. Facilities serving non-domestic properties will need to comply between two and four years later, depending on the risk they pose to the environment.
lexisurl.com/iema105360

25 Sep 2015
London air quality

The Greater London Authority is consulting on plans for a new statutory system for air quality management in the capital. The proposed London Local Air Quality Management (LLAQM) will apply to all boroughs and is intended to help them work together on air quality issues. The consultation document states the LLAQM will help to focus and coordinate action to help boroughs can deliver improvements to reduce emissions, concentrations and exposure to particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO_2) as well as raise awareness about air pollution.
lexisurl.com/iema105351

25 Sep 2015
Scoping for geological disposal

Decc has published a report setting out the proposed technical scope of the appraisal of sustainability of the national policy statement (NSP) for geological disposal of radioactive waste. The report, which was produced by Amec Foster Wheeler, is intended to satisfy the requirements of the EU Strategic Environmental Assessment Directive and implementing regulations. The appraisal of sustainability will identify, describe and assess the likely significant socio-economic and environmental effects of using the NSP to deliver the government's policy of implementing geological disposal for higher-level radioactive waste as well as alternatives. Although the scope of the work applies to planning considerations in England, the consultation has been extended to include statutory bodies in the devolved administrations.
lexisurl.com/iema105354

15 Oct 2015
Pollutant release and transfer register

The European commission is carrying out an evaluation of the effectiveness, efficiency, coherence, relevance and the added value of Regulation 166/2006 on the establishment of a European pollutant release and transfer register (E-PRTR). It is seeking stakeholder feedback to assist in this work. The evaluation report is due to be published in 2016. The E-PRTR is an inventory of potentially hazardous substances and pollutants released to air, water and soil and transferred off-site for treatment or disposal.
lexisurl.com/iema105362

New guidance

Waste	The UK's environment regulators – Environment Agency, Sepa, NRW and NIEA – have published an updated version of the technical guidance (WM3) on how to assess and classify waste (lexisurl.com/iema105385). It is described by the agencies as a comprehensive reference manual for anyone involved in producing, managing and regulating waste. As well as chapters on waste classification and assessment, and further guidance, there are four appendices: how to use the list of waste; hazardous substances; hazardous property assessment; and waste sampling.
ESOS	Guidance from the Environment Agency on the energy savings opportunity scheme (ESOS) that was first published in February has been updated (lexisurl.com/iema105386). *Comply with ESOS: a guide to qualification, compliance and notification requirements* provides details on: which organisations qualify; what qualifying organisations need to do to comply; how organisations should notify the agency that they are compliant; the compliance deadlines; and the penalties are for non-compliance.
Energy technologies	Decc has published its annual updates to the lists for energy technology criteria (ETCL) and energy technology product (ETPL). The ETCL (lexisurl.com/iema105380) contains details of the energy-saving criteria that must be met for each of the technology classes, from air-to-air energy recovery devices to waste heat to electricity conversion equipment. The ETPL (lexisurl.com/iema105382) contains the products that have been certified as meeting those standards. The energy and climate change department has also revised the energy technology list claim values (lexisurl.com/iema105383).

Laying down the law

Planning for fracking operations

Andrew Wiseman outlines new government proposals to speed up the planning process for onshore gas and oil applications to help trigger shale exploration in the UK

Proposals to fast-track shale gas planning applications have been announced by the departments of energy and climate change (Decc) and the communities and local government (Dclg).

Energy and climate change secretary Amber Rudd said: "We can't have a planning system that sees applications dragged out for months, or even years on end."

Opponents of fracking have queried whether the changes are about improving the planning system or simply trying to achieve different result from those that the planning authority might take.

A case in point

The joint announcement follows a high-profile example of the difficulty in obtaining planning permission for shale gas exploration. In June, Lancashire County Council rejected Cuadrilla Resources' planning application to drill, fracture and flow test four shale gas wells at Preston New Road, near Blackpool.

Cuadrilla had originally submitted the application in June 2014 for the site and another at Roseacre Wood, also in Lancashire. The council took 12 months to reach a final decision. The deadline for the decision was extended several times, twice at the request of Cuadrilla, which wanted to submit a new traffic plan for Roseacre Wood and new proposals on noise mitigation. Further delays occurred when the council asked Cuadrilla to revisit part of its environmental impact assessment, and to allow the council to consult the public on new information.

The council refused the proposal for Roseacre Wood in line with the advice of its planning officers. The decision to reject the Preston New Road application was particularly controversial, because the council's planning officers had recommended its approval.

Cuadrilla announced in July that it will appeal against the council decisions to refuse the two applications as well as the refusal of a separate one to install seismic and groundwater monitoring stations around the proposed Preston New Road exploration site.

The new planning proposals

The new measures proposed by Decc and Dclg include:

- Identifying local planning authorities that repeatedly fail to determine oil and gas applications within the statutory 16-week timeframe. The government will be able to call in planning applications from "underperforming" councils.
- The government will consider calling in shale gas planning applications and recovering shale gas planning appeals on a case-by-case basis.
- Adding a new shale gas application criterion for recovery of appeals.
- Requiring the Planning Inspectorate to prioritise planning call-ins and appeals involving shale gas.
- Further work on revising permitted development rights for boreholes for groundwater monitoring.

The government has also announced that it will this year publish proposals on the design of a new sovereign wealth fund for communities hosting shale gas developments. The plans to launch a fund from shale gas profits were confirmed by the chancellor, George Osborne, in his July budget.

At the same time as outlining plans to amend the planning process, Dclg published the government's response to its March 2015 consultation on giving permitted development rights to drill boreholes to monitor groundwater during petroleum exploration (including shale gas) by amending part 22 of the Town and Country Planning (General Permitted Development) Order 1995. The revisions would enable groundwater monitoring to be put in motion earlier in the planning process, and, says the government, provide early reassurance that the environmental impacts are being properly considered in the case of petroleum exploration proposals.

A second consultation has now been published containing further amendments. The government says this should assist in establishing a more informed baseline for future monitoring; provide information to inform any environmental statement for an environmental impact assessment; and inform the location of drilling sites for any future planning application for petroleum exploration. The consultation (lexisurl.com/iema107498) closes on 24 September 2015.

Council rejected legal advice

In June 2015, county councillors in Lancashire refused an application by Cuadrilla Resources to frack for shale gas at the Preston New Road site, near Blackpool despite legal advice that their grounds would not stand up at appeal. The application was rejected on the grounds of noise and visual impact by nine councillors out of 14 on the council's planning committee. Before the vote, the committee sought legal advice from David Manley QC. He stated that refusing the application on the ground of visual impact would not stand up at a planning appeal since the council's own landscape adviser had described the impact of the development as "moderate". The council's planning officers had recommended that the application be approved. However, independent legal advice by Richard Harwood QC for Friends of the Earth stated that committee members were entitled to disagree with advice given to them. He pointed out that Cuadrilla's proposal would have a moderate impact on landscape and would raise noise levels in the area.

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Smarter ways of working

Bridget Leathley says software and apps can help organisations manage data, but only if they follow some basic rules

Computers were meant to make our lives easier. We now have access to environmental surveys, energy use predictions, ESOS (energy savings opportunity scheme) audits, carbon reporting data, waste management records and demolition surveys on the computer rather than on paper. This should mean that we can reach the information we need at the click of a button. However, although the 30-year-old operations manual, safely stored in its ring binder, still exists in some organisations, it is often a struggle to find those electronic files that were emailed over the previous year. And, if another employee edits the Excel file in which you were compiling your energy stats, how can you be sure which version contains the most up-to-date information?

Organisations and people tend to make two mistakes when they are thinking about electronic solutions. First, they consider computer files to be data rather than the dead documents they really are. Once closed and stored, electronic files – whether that report is sent as a pdf, the Excel spreadsheet containing targets, or the Word document listing outstanding actions – are of no more use than their paper counterparts. Second, where investment is made in software systems it is often piecemeal, and procurement is focused on dealing with one problem at a time; instead, organisations should be thinking about how to integrate information across fewer products. Rather than helping, the growth of the app may be making this problem worse, creating silos of information that are inaccessible to other systems.

Some apps require the user to return to their mobile device to manage the information, while others will email yet another pdf document to be stored and managed. Even where the mobile app feeds into a back-office system to allow issues raised to be managed, the information has a limited lifespan.

Imagine this. The health and safety manager is doing a noise survey, and asks the facilities manager for a pdf version of the CAD (computer-aided design) drawing provided by the fit-out company a few years earlier. The H&S manager uses Photoshop to annotate this with sound levels and saves it as a jpg file, accompanied by an Excel spreadsheet to calculate the exposure for each employee. The environment manager gets a copy of the same drawing, because she wants to audit the energy efficiency of the equipment. She annotates it with equipment numbers in Paint and saves it as a bmp file; and creates a table in Word

Image: iStock

Apps and systems

Health and safety systems

Health and safety management systems, such as OSHENS (oshens.com), SHE Assure (shesoftware.com) and Effective (effective-software.com) are modular, enabling organisations to start with a single module, such as accident reporting, and build on extra modules over time. This gets around the problem of having to change too much too quickly, and allows an organisation to gradually build confidence in the system. All three systems include a document library so users can keep waste transfer notes on the same system, for example. Environment does get a specific mention in these systems, but usually only where it fits the same model as health and safety. For example, as well as reporting trip hazards and good personal protective equipment observance, the OSHENS website encourages the reporting of environmental "near misses, hazards and good practice" in its observations module. Similarly, Effective includes environmental incidents among the events that might be reported in its Incident module. SHE Assure includes a separate module for environmental assessment based on the same model as its safety risk assessments and action tracking features. Clients are using this for monitoring and controlling waste, air emissions, land contamination and release to water.

Geo-sight

With Geo-sight, workers onsite can use a mobile app to take a photograph of any concerns and send it with location-tagged information to a cloud database, which can be accessed by site managers. The back-end system displays each submission on a site plan using the geographical information from the phone so that the manager can prioritise resources. Each report is marked as "new" when it arrives; "reviewed" when it has been assessed; and "deleted" once the problem is fixed. Although developed originally for highway construction and maintenance projects, Geo-sight now markets to "any company where pictorial evidence would prove advantageous". With its customisable approach, it would be straightforward to include categories, such as environment or waste.

Envirocheck

Envirocheck from the Landmark Information Group assists users to compile information in layers about a location relevant to a phase 1 environmental report. The consultant using Envirocheck has access to current and historical maps and aerial views, which can be overlaid as transparencies. This allows, for example, a view of the position of an old oil storage unit in relation to the current car park, which might become the new swimming pool. Information is saved and the consultant can add their own annotations. Also, information from the office-based desktop review can be analysed onsite on a mobile device or tablet. Additional information can be captured and geo-located from the mobile device and then transferred back to the office at the press of a button, ready to be fed directly into the phase 1 report, which is delivered to the customer as a paper document or a pdf file.

Field View (formerly known as Priority 1)

Viewpoint markets Field View as a system for managing health and safety in construction, providing an efficient means to monitor building progress and to log and close out snags during a project. Plans, photos and other documents are provided to onsite managers on tablet devices, allowing notes to be made, more photos added and actions to be raised, based on location. Using location data from your tablet associates the photos automatically with the location they were taken. Having been renamed Field View, it will now also be sold as part of the software company's collaboration platform, 4Projects.

Standalone apps

The market in standalone apps has grown this year. Some are free to download and use – at least, initially. Crowberry Consulting introduced its Energy Review app for iPads early, which aims to "support any business on its journey to achieving an energy management system". The app prompts users to select products from a pre-populated menu or to add their own devices and energy data. Devices are grouped into "projects" – for example, by location – and running hours for each device entered. The app does the maths for the user, and emails a pdf report summarising energy use and providing some standardised text for an energy review report.

Similar apps have been developed to support safety objectives. For example, CDM Wizard from CITB was produced in response to the Construction (Design and Management) Regulations 2015, which came into force in April. The regulations extend the need for contractors to produce construction phase plans. CDM Wizard guides a principal contractor through the questions they should be asking about a job, be it maintenance, remodelling or major construction. What pre-existing hazards are there? What types of task are involved? Who could be exposed to hazards? After a few questions, a CDM construction phase plan is emailed, complete with suggested control measures for each hazard. The Risk Assessor app (riskassessor.net) has a broader application, and allows the user to review and tailor suggested controls and prompts for an assessment of risk level.

These apps could be useful in reminding a manager to consider energy use or hazards. However, what they produce at the end is a pdf document. Although the document can be distributed to staff, clients or contractors, it is not a tool for management. Energy Review and Risk Assessor allow users to go back into the app to review or change data, while CDM Wizard requires users to start from scratch each time.

Image: iStock

containing the energy data. There are now three different versions of the drawing, along with significant tables and spreadsheets, all saved in different locations and in different formats. When the building services manager is deciding whether it is cost effective to replace a piece of equipment, she emails the HS, environment and facilities managers asking what information they have. In an ideal world, they will find all the files and send them to her, and she will probably print them out. Other people in the organisation may have other documents that would help but, without knowing what to ask for, the information is lost.

How can practitioners use software to integrate information in a manageable way?

Bringing data to life

Many organisations see the benefits of electronic management systems, and invest in cloud-based products that enable them to access files from anywhere in the world. But storing everything on SharePoint or Google Docs does not mean that people in the organisation know where to look for the information, or that it will be in a usable form when they find it. Where information is accessible, but it is also dormant and unmonitored, access does not necessarily make a practitioner's job any easier. Operation and maintenance files might contain information about the required frequency of emergency light testing, the capacity of the fuel tank and the location of the meters, but they will not remind practitioners what to do when. An environmental risk assessment report might contain important actions required to improve the management of legionella, chemical control or air quality, but it will not check that personnel have completed the actions. What is needed is the source data.

It took a lot of time and effort to create the data, so why waste it by turning into a dead document? Part of the reason is commercial. The third-party organisation that carried out the survey or audit this year wants the client to go back to them next year. If they provide access to the background data, the client might decide to do the work in-house next time. Some consulting organisations deliver actions from their audits, surveys and reviews by means of a management system. This allows customers to set deadlines, allocate responsibilities and automate reminder emails. Actions can be signed off when completed, and users can quickly see where there are outstanding actions.

Bureau Veritas, for example, provides customers with managed access to actions from any work it carries out through its Signature management system. Santia's online tool erisk provides access to any of the risk management consultancy's recommendations on fire, asbestos, food safety, environment, legionella management, health or safety. Similarly, Assurity Consulting provides the results of its environmental, health and safety audits and reviews for clients through an online database called Assurity Plus. Greg Davies, head of services development at Assurity, says: "Our customers don't just want a compliance report. They need verifiable management information. Assurity Plus provides real-time position analysis across the whole portfolio, as well as at individual premises level."

Returning to our original scenario, the jobs of the health and safety, facilities and environment managers might all be made easier if they had software systems that provided them with the live data rather than dead documents. But

the building services manager would still have to access three (or more) different systems, probably with different logins and passwords to get to the information that was needed. Organisations must therefore think more carefully about how to integrate the information that they create and use.

Integrating systems

It may seem easier to buy a different computer system to solve each problem, but the effort of finding products that cover more than one problem pays off in the long run. For example, environmental consultant Alessandra McConville is guiding one client through the process of replacing a system for collecting energy billing data and a second system for reporting for the CRC scheme. These are being replaced with a single energy management product that will collect, collate and report energy data and carbon emissions for nearly 600 properties. It will also provide building managers with access to their own energy billing data.

Similarly, rather than separate systems for environment, health, safety and quality management, can an organisation have one system to track all the issues arising for a single location? Imagine that, instead of three separate pictures, the environment, health and safety and facilities managers could all layer their energy, noise and planning information onto one view of the plant room. Envirocheck supports the compilation of environmental information from several sources on a location plan to produce a phase 1 environmental report. Something similar for operational sites would be a step in the right direction.

Online health and safety management systems (panel, p.14) allow health and safety professionals to link accident reports into associated risk assessments. These trigger reviews and new controls to tie risk assessment training requirements into training records and to link online learning to contractor induction processes. Where integration of environmental management exists, it relies on internal processes. The health and safety manager can choose to include the environment manager in the list of people to review and approve contractor documentation, for example, to make sure the contractor has described its waste management process. An audit or checklist module can be used to provide environmental content as well as health and safety content. These systems do not deal with ESOS, CRC or greenhouse gases, however.

Chris Beaumont, marketing manager at SHE Software, says: "We don't want to supply a full environmental management system. We focus on what we're best at – health and safety. However, we are working with clients to allow them to import environmental data so that they can use the action tracking, asset management and reporting modules they are already comfortable with in SHE Assure." Nia Humphreys, training and account manager at Effective Software, says customers are now asking for features to capture environmental incidents or create environmental audits. "Our system is flexible enough to cater for this already," she says. "If something more bespoke was required, we'd certainly look at what they wanted and see how it could be integrated into Effective."

The health and safety management systems listed in the panel on p.14 are used largely by organisations during operational phases. Field View, formerly called Priority 1, is different and is principally a construction phase management system. Willmott Dixon uses Field View for quality control, but also for health and safety and environmental management. An important driver for using the system across all three functions was to reduce the number of systems, both paper and IT, the company uses. The system aims is to be paperless where practicable. Field View now manages everything to do with the "physical" part of practitioners' work, whether they are in a quality, safety or environmental role. "A key benefit has been to provide a tool that allows site managers to spend more time onsite rather than behind a desk. Sub-contractors are also expected to use it, and provided with training and, if necessary, loaned tablet devices so that they can do their own site checks directly on to the same system," says group environment manager Martin Ballard.

Changing behaviour

A key statistic from 2013 was that 90% of the world's data had been created in the previous two years. It was also estimated that this was expanding at a rate of 2.5 million million million (quintillion) bytes a day. Although some of this additional data refers to records of credit card expenditure and Facebook postings, workplaces are also generating more information. If it is to be managed successfully, organisations need to change how they procure services and products in two ways:

- when procuring a service, make sure the results are in a format that allows the organisation to manage actions – do not accept a "dead" document as the only option; and
- although it might seem easier to buy a new piece of software that will solve one environmental management problem, customers need to seek solutions that can be used to manage different environmental issues – or, even better, where the organisation can manage its environment, health, safety and quality objectives using the same system.

These two changes come with two warnings, however. The first is that, however good the software, it will not make poor management structures work. Ballard says Willmott Dixon already had in place the same structures for managing the environment and health and safety. "People in those roles cooperated on inspections, permits and control of contractors, so using Priority 1 to manage both areas was a natural step for us," he says. The second caveat is that organisations will get the type of consultants and software products they ask for. If it insists on the cheapest consultant, it may get the one that does not even know how to generate contents page numbers for the report in Word (yes, I've met them) and certainly will not provide them with access to the data. Likewise, purchasing a software system that supports the existing piecemeal approach to managing information across time and topic will leave the organisation continuing to manage in an ad hoc way.

Bridget Leathley is a health and safety specialist.

A thirst for savings

Lis Stedman talks water efficiency with Heineken, Berendsen and Whitbread

Water efficiency is too often regarded as the Cinderella of sustainability and efficiency initiatives, with most organisations focusing first on energy as their major cost. Water is often considered relatively cheap, but is it really? Many UK companies, particularly major consumers, think differently, although they acknowledge that generating real and sustainable water efficiency needs a considered strategy.

At a corporate water risk conference in 2014, Julian Carr, director at industrial laundry services group Berendsen, outlined the water efficiency steps the company had taken over the previous five years, from developing the idea and setting out its plan to designing and implementing a programme to achieve the Carbon Trust standard for water. "Embarking on a project such as this requires careful planning," he told delegates. "It's not simply about investing in new equipment. We have implemented changes across the company including, for example, updating the composition of some products, changing our internal production processes and engaging, training and empowering our teams. We've also put in place a monitoring system to ensure that we retain and build on the gains made. It's a complex project, which affects many different areas of our organisation."

Heineken, the Dutch-owned brewing giant, is a major consumer of water. It does not differentiate between energy and water when seeking efficiencies. "Water efficiency in general is not treated differently from energy. It's about being as efficient as possible, and as efficient as the existing equipment will allow," says Peter Jonkers, green brewery programme manager at Heineken.

Major savings

Berendsen UK was one of the first four companies to sign up to the Carbon Trust standard for water and helped to develop it. The company has invested over £4 million in energy-saving and £2 million in water-saving measures in recent years, which gives some idea of what is possible. As a result, Berendsen has reduced its carbon footprint by 5.8% and cut its water use by 60.4%, a yearly saving of 1.6 million cubic metres. The annual carbon saving is 32,645 tonnes.

Peter Woolstenholmes, the firm's energy manager, says there are two reasons behind Berendsen's focus: "First, reducing the amount of water we buy, heat and then dispose of helps us to control our costs. Second, we want to reduce our environmental impact.

"We get asked quite a bit with tenders about what we are doing for our environmental credentials, so we're able to say how well we are doing with our energy and water reduction strategies, and we are also able to keep our costs down."

The company started reducing its water consumption in 2005. "We made some remarkable savings in the first few years, but as time goes on it gets harder to make the savings. We have got very efficient processes now, which makes it difficult to find more efficiencies but we are still probing and trying new things.

"We have changed to more water efficient processes and we have also installed a lot of water recovery systems for the laundry process. The rinse water, for instance, is good quality and you can use that in the wash section of our process." Woolstenholmes says effluent recovered is reused it in the wash process. "We would normally send it down the drain, but some is of a quality that we can reuse, so we recover and filter it. We have also got reverse osmosis, which gives us very high quality water from the effluent, and we get very good recoveries from those."

He adds: "If we reuse water, it means we don't have to buy as much, so we get savings from that, and we also get a saving because we haven't disposed of the effluent. We get charged more for our effluent than we do for our incoming water." Because it is hot water, Berendsen is able to recover and use the heat. "One hidden benefit is, because we have lowered our water use to the point where we are now very efficient, our operators are very much more aware of the process," says Woolstenholmes. "Because we're using so little water, if things are not right, then things are quite badly wrong; whereas, if you are using a lot of water, if things are a little bit out it doesn't really

If you reduce water use, you reduce costs, but you also improve your eco-efficiency. So there is a sustainability and an economic driver for action

Image: iStock

Heineken in the UK

Veolia Water Technologies has supplied a bespoke water recovery system for Heineken's cider mill in Hereford. As part of its water efficiency drive, Heineken identified a potential saving from the water loss in the concentrate stream from its borehole water treatment reverse osmosis (RO) system. Using Veolia's RecoBLUE online calculator, Heineken found it could recover about half of the RO losses at a quality suitable for use as boiler make-up water.

It was essential that the recycling process should not increase energy and chemical consumption, so Veolia produced a specially configured Sirion mega recovery RO unit (pictured). This does not need additional chemicals for conditioning ahead of recovery and uses low-pressure, high-rejection membranes with low energy consumption.

The solution has reduced the mill's water footprint by more than 130,000m^3 – an annual saving of more than £100,000 that will repay the capital cost of the system in less than four years.

make much difference. But when using very little water, if things aren't perfect it does make a significant difference to our process."

He points to the advantages of raising awareness and understanding among operators. "We have had to go through a lot of training to get there, but we do benefit; we have people we can talk to about water efficiency and they understand it."

Energy costs too are reduced. "Because we are using less water, we have got less water to pump around our plant so we use less electricity. There are quite a few hidden benefits that aren't immediately obvious," says Woolstenholmes.

An efficiency culture

Jonkers says Heineken tries to use water in the most optimal way to arrive at low water consumption figures. This starts in the brewery with culture that is aware of and strives for efficiency (see panel, left). Jonkers warns that this can be a complex equation: "You can use new technology, maybe – water regeneration [treating the brewery effluent to be partly reused within the brewery itself] is nice – but you have to be aware of the possibility of higher energy use. It is a balance."

Heineken has more than 150 sites around the world, including three breweries at Edinburgh, Manchester and Tadbury and two cider mills in Herefordshire. This spread allows it to benchmark performance. "Theoretically, we are able to tell what the level of water consumption should be, given the local conditions of a specific brewery," explains Jonkers. In practical terms, achieving the ideal has entailed changing production processes, including equipment and the positions of water nozzles in the pasteurisation funnels.

Challenges are also an opportunity to learn, Jonkers says: "If a brewery has a problem, we will find a solution based on experiences and knowledge in the Heineken group and share the practice to get even better performance."

These efforts do have a financial benefit, he stresses, but the impetus for Heineken is not purely economic. "If you reduce water consumption, you reduce costs, but you also improve your eco-efficiency. So this is both an economic driver, as well as part of our sustainability agenda, which makes us want to deliver these efficiencies."

Heineken has a programme called "Brewing a better world" and water has a prominent place, with a target to reduce consumption per hectolitre of beer and to undertake water balancing. It takes about 3.9 hectolitres of water to produce a hectolitre of beer, says Jonkers. "Water use simply says we take in water and it goes out as product and wastewater, though most of the time it goes back to the watershed in a treated way," he notes. "The water balance is the part of the figure that does not go back to the watershed as our beers can move anywhere, outside the local watershed area. The beer itself is of course 1 hectolitre per hectolitre and the other part, lost for the watershed, is water evaporated by boiling and in waste streams such as spent grains. These two together account for 1.5 hectolitres per hectolitre, and it is this volume that we try to balance."

Heineken does this by planting trees and encouraging farmers in the same watershed as the brewery to reduce the amount of water they consume in growing crops. "The company does things for the environment that are not solely on Heineken's account," says Jonkers. "It has to be a collaborative action – it doesn't make sense for Heineken on its own to change water management in an area. We can't change the world on our own."

Heineken has just increased its commitment to reduce water from an original 2009 target of 25% by 2020, raising it in 2014 to 30%. Jonkers believes in spreading the message to other companies: "They can learn from us or join us, and we are open to learn from them."

Premier returns

Whitbread is another major UK-focused business that is enthusiastic about water efficiency. Its brands include Premier Inn, Costa Coffee, the Beefeater Grill, Brewers Fayre and Taybarns. It is the UK's largest hotel chain, restaurant and coffee shop operator.

Environment manager Ben Brakes explains that the group's "Good together" corporate responsibility programme has three pillars, one of which relates to environmental management; and its work streams are carbon, water and waste reduction.

In 2010, Whitbread developed a strategy against a 2009 baseline to deliver a 15% reduction in water consumption by 2017. The original strategy incorporated an annual 2% reduction through a variety of water efficiency measures. In 2013–14, the

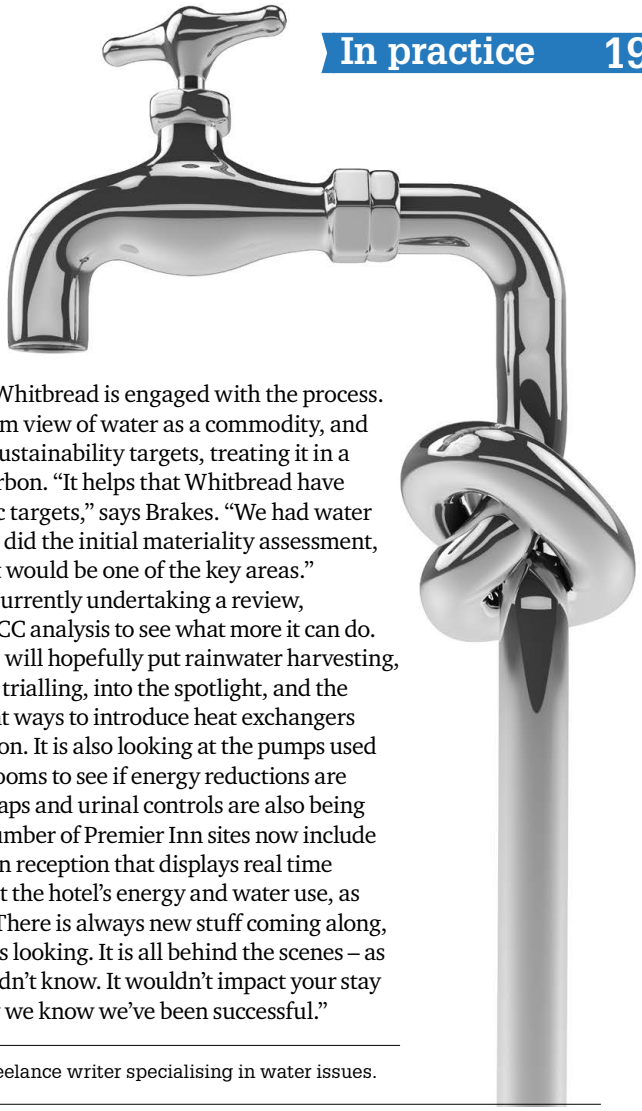

Image: iStock

group exceeded its own targets by achieving a 21.2% water consumption reduction relative to sales against the 2009 baseline. It has now adopted a new target; to achieve a 25% reduction in relative reduction in water consumption by 2017.

Brakes explains that the first thing Whitbread did to tackle water use was to install automatic meters [AMRs] across its hotel and restaurant estate. "Until you do that, you can't understand your water use," he argues. "The meters enabled us to understand where water was used and then to look at ways to reduce it, which range from a simple 'switch it off' requirement to new technologies and equipment."

He says that it costs about £300 to install an AMR and that the investment has paid for itself several times over. "We have had five-figure rebates. We found leaks that without AMR we would never have identified."

The group undertook a MACC – marginal abatement cost curve – analysis to understand what it could achieve in water savings if it invested a set amount of time and capital. Given the payback for investment, it is possible to see which technologies may be adoptable. It is not a simple calculation, however. "There is not a simple payback for a major piece of equipment. There is a 10-year depreciation," says Brakes. "The trouble with water is that it is very cheap, and [if you are] trying to build a business case based purely on savings … the figures don't look particularly good. You have to build a broader business case."

Nonetheless, Whitbread is engaged with the process. It takes a long-term view of water as a commodity, and builds it in to its sustainability targets, treating it in a similar way to carbon. "It helps that Whitbread have very strong public targets," says Brakes. "We had water in mind when we did the initial materiality assessment, and we decided it would be one of the key areas."

Whitbread is currently undertaking a review, rerunning its MACC analysis to see what more it can do. This, says Brakes, will hopefully put rainwater harvesting, which it has been trialling, into the spotlight, and the group is looking at ways to introduce heat exchangers as a retrofit solution. It is also looking at the pumps used to take water to rooms to see if energy reductions are possible. Sensor taps and urinal controls are also being adopted, and a number of Premier Inn sites now include a "green screen" in reception that displays real time information about the hotel's energy and water use, as well as top tips. "There is always new stuff coming along, and we are always looking. It is all behind the scenes – as a guest, you wouldn't know. It wouldn't impact your stay at all. That is how we know we've been successful."

Lis Stedman is a freelance writer specialising in water issues.

Putting EIA on the right track

Paul Suff learns about the challenges faced by practitioners assessing the impacts of the planned high-speed rail link

At about 50,000 pages, the environmental statement detailing the outcome of the environmental impact assessment (EIA) for phase one of the proposed high-speed rail link (HS2) between London and Birmingham is one of the largest produced in the UK.

But, as Paul Johnson, director of environmental consulting at Arup and one of the EIA experts who had overall responsibility for managing the assessment, says: "HS2 is simply bigger than any other infrastructure project. At 225km, it is more than double the length of HS1 [London to the Channel Tunnel]. That doesn't mean you write twice as much, but the statement has to be a certain size because it has to contain a lot of information. There is also a legal requirement that, on a development of such scale, the EIA reports every significant environmental effect."

In his opinion, the environmental statement is a proportionate document and, because of the way it is structured, it is also accessible. Three of its five volumes include: area reports for each of the 26 community forum areas established by HS2 Ltd, the public company created to deliver the project; a report on route-wide effects; and detailed information for each of 14 environmental topics assessed. It is supported by a code of construction practice, health and equality impact assessments, a transport assessment and a sustainability statement.

The direction of the environmental statement was the responsibility of the environmental team in the technical directorate at HS2 Ltd. This was led by environment and planning director Peter Miller, supported by the route-wide environment manager Christian Bonard, from the company's development partner, CH2M. Building on the strategic environmental work undertaken by HS2 Ltd in 2010–11 for its appraisal of sustainability, initial work on the EIA started in early 2012 and the draft statement was published online for consultation on 16 May 2013. The main environmental statement was submitted on 25 November 2013. Since submission, work has continued to refine the design and two "additional provision" environmental statements were published in September 2014 and July 2015.

Although the HS2 EIA was similar to that for assessments of other nationally important infrastructure projects, its high-profile, scale and consenting mechanism gave rise to some unique challenges.

A hybrid process

The government has opted to secure consent for HS2 through a hybrid bill rather than one of the other legislative mechanisms for approving new infrastructure projects, such as a development consent order (DCO) or orders under the Transport and Works Act. A similar hybrid approach was used for HS1 and Crossrail,

In praise of EIA

"Environmental considerations go to the heart of the HS2 project. The professionalism demonstrated by our consultants and our staff through our environmental assessment work has enabled the government to select a route and parliament to adopt the principle of new high-capacity, high-speed rail for the country. It's important to understand EIA is not static – the wide-ranging documents present evidence, the public participation enables those affected to have their say and, through parliament's select committees, the route is being scrutinised and changes made. The environmental statement sets a benchmark from which future improvements are encouraged through design and construction to further benefit local people and the natural environment. Our continued commitment to take practical steps and seek improvements will challenge our supply chain as we deliver this next generation of sustainable transport."

Peter Miller, environment and planning director HS2 Ltd

the east-west London link. It means the determining authority is parliament, which has implications for the EIA. The environmental statement accompanies the bill.

The EIA must comply with EU and domestic legislation, and, like other assessments, statutory bodies and the public have to be given an opportunity to scrutinise and comment on the environmental statement. The hybrid bill process also introduces a "petitioning period", which is managed by parliament and its representatives. Individuals, groups of people and organisations that can demonstrate they are directly and specifically affected by the project can oppose any aspect of the bill, although not the principle of the project. These so-called "petitions" are considered by the House of Commons and House of Lords select committees, which have the power to change the bill if they agree with the petitioners' objections. The HS2 consultation and petitioning period for the main environmental statement ran from 25 November 2013 to 27 February 2014.

Stuart Coventry, director of planning and environment at AECOM (formerly URS), supervised the overall EIA process with Johnson. Coventry points out that parliamentary consent through a hybrid bill does not formally impose the same level of engagement with stakeholders as is demanded under a DCO for a nationally significant infrastructure, for example. "However, we took the decision to follow the same engagement procedures as a DCO," he says. "We didn't want it to be any different. Public engagement was a crucial part of what we did."

HS2 Ltd established 26 community forums across five regional areas, each covering about 10km of the proposed track. The company describes the forums as community engagement to discuss local design and environmental issues. The environmental statement includes a report on each forum area. "This was to ensure someone would have read only what was relevant to them without having wade through the whole statement. That was different on this project," says Coventry.

He explains that careful thought was given to where one area stops and another starts: "We wanted to keep to a minimum the number of people that would have to

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look at two reports. I think that is something we would repeat." Johnson agrees. "On a linear project of the scale of HS2, you need to focus on bite-size chunks of information. That makes it more accessible," he says.

The teams of EIA consultants (EIAC) were spread across the five areas for contractual reasons. Several environmental and engineering consultancies, either on their own or as part of a consortium, won EIA contracts (see panel, below). Dividing the contracts among some of the UK's biggest consultancies was an acknowledgment that not all the technical skills and best people in rail infrastructure are in one company.

Scope of the HS2 EIA

- Agriculture, forestry and soils.
- Air quality.
- Climate.
- Community.
- Cultural heritage.
- Ecology.
- Electromagnetic interference.
- Land quality.
- Landscape and visual assessment.
- Socio-economics.
- Sound, noise and vibration.
- Traffic and transport.
- Waste and material resources.
- Water resources and flood risk assessment.

The EIA team

The environmental assessment work for phase one of HS2, from London to Birmingham, was split into geographical "packages" under four contracts:

- **West Midlands**: covering Birmingham and Solihull – Arup and AECOM.
- **Rural north**: covering Warwickshire and Staffordshire – Atkins.
- **Rural south**: covering Buckinghamshire, Hertfordshire, Oxfordshire and Northamptonshire – ERM, Temple Group and Mott MacDonald consortium.
- **London metropolitan** and **Euston**: from Euston to the edge of London and M25 – ERM, Temple Group and Mott MacDonald consortium.

Traffic assessments were provided by the area engineering consultants: Arup (West Midlands and Euston), Atkins (rural south), Capita (rural north) and Mott MacDonald (London metropolitan).

Arup and AECOM (formerly URS) also provided environmental overview services for phase one, which involved providing technical leadership and coordinating the work of the EIA consultants as well as delivering compliant assessment documents, including the project's environmental statement.

Direction of all environmental work on phase one, culminating in the main environmental statement, was led by the technical directorate at HS2 Ltd supported by its development partner, CH2M.

"Because of the scale of the project, no one firm could deliver the numbers of highly experienced people across the range of skills required," says Johnson.

In addition to providing oversight of all environment work between London and Birmingham, Johnson and Coventry were tasked with establishing the environment standards and scope, and the methodology for the assessment. "We put in place all the programmes and management processes to enable the EIA consultants to do their work," says Johnson. "We established the ways for collecting and processing baseline data to ensure the EIAC teams weren't using slightly different methodologies. So, for example, the HS2 team agreed with Natural England how to assess bats across the entire route."

In a departure from normal practice, the draft scope and methodology report was published for public consultation in autumn 2012. Johnson says only minor amendments were necessary after receiving feedback. "This was because we'd already discussed it with statutory bodies like the Environment Agency and English Heritage (now Historic England)," he says. "The professional institutes also set standards and publish documents on how to carry out impact assessments, so you ensure your approach complies with the relevant guidance."

Common way of working

Adopting a common approach across the project for the types of surveys and other technical information required to assess effectively the potential environmental impacts was important for writing the environmental statement. "The teams would submit their EIA reports for us to review," says Johnson. "We had to turn those into one consistent document. Even though the submissions would differ slightly in terms of writing style, the fact that they had followed the same methodology and templates helped us to create a relatively seamless statement."

Coventry says settling on consistent outcomes was important. "We were focused on getting the right mitigation answers in each locality, but we also had to ensure we reached common solutions where the same problems arose. We spent a lot of time considering those answers and the descriptions of them."

Johnson agrees: "A solution suggested by a team in one area might not be the same as that put forward in another. There might be very good reasons for that – maybe the areas differ or the issue is not quite the same – but we had to be fair and consistent and apply similar levels of mitigation across the project."

Noise was one topic examined locally and across the route. The EIAC teams looked at construction noise effects on communities and the central overview team led by Johnson and Coventry examined operational noise for when trains start running. "This is so we can design the track and barriers to reduce noise impacts," says Johnson. Climate impacts and greenhouse gas emissions were also assessed across the planned 225km line.

Filling in the gaps

The next step after agreeing the scope and methodology report was to produce a draft environmental statement. However, some of the environmental impact consultants encountered problems accessing sites. This posed a major challenge. "There is considerable local opposition to HS2 and a lot of people did not want to have consultants on their land gathering information," says Johnson. "We had a considerable amount of information for some areas and not very much for others – and, in some locations, little hope of getting more. That's not unusual. It's rare to have all the information you need and you often have to assume some things. Nonetheless, we had to make a decision on how to deal with this on HS2."

The answer was to construct a "reasonable worse case" scenario in the areas where information was scarce. This was acknowledged in a letter from HS2 Ltd to Joan Walley MP, who was then chair of the environmental audit committee, on 29 October 2014. HS2 Ltd wrote: "The assessment was based on known, reliable sources of information, such as from Environmental Resource Centres, and, where practicable and where access to land was made available by third parties, appropriate surveys on the ground. Where access was not available the assessment was based on a precautionary approach, which was developed using existing data, to present a reasonable worst case of the likely significant environmental effects."

Coventry describes it as an exercise in filling in the gaps. "We started with desk-based research, using information from organisations, such as the wildlife trusts, extrapolating from what we did know about one area to another. We might know a lot about a similar piece of habitat a few miles away and we took that information and developed a reasonable worse case baseline for the one where we do not have enough data."

Johnson explains that aerial and satellite pictures were valuable: "We would assume species were present. If the pictures showed a pond, we'd assume it contained great crested newts. If there were large trees or suitable woodland, we'd assume bats were present. We wrote the environmental statement and designed the potential mitigation on the basis of those assumptions."

This approach was subsequently proven to be sound in many cases. After the draft statement was published, consultants did obtain access to some of the areas that had previously been out of bounds and carried out ecological surveys. "We made a few discoveries, but in most cases they confirmed our assumptions," says Coventry.

Johnson says access also improved in some areas, as it became increasingly likely that the project would get the green light. He also points out that the extent of access required was sometimes a factor in getting permission from the landowner: "Ecological surveys to monitor bats, for example, require multiple visits, whereas others may require several specialists to attend together, but only on one occasion."

He confirms that some assessment work continues. "Where there are protected species, such as bats, we need to record their movements and population numbers over time. New information on ancient woodland characteristics has also been collected. The updates are necessary to refine our mitigation plans."

The central team managing the EIA received around 21,000 comments on the draft environmental statement and some 22,000 comments on the main environmental statement. These all had to be examined, evaluated and considered. "We did discover some additional information, which was helpful," says Coventry.

> Where access was not available the EIA was based on a precautionary approach to present a reasonable worse case scenario of likely effects

Tried and trusted

Johnson says the environmentalists working on HS2 have followed tried and trusted techniques to assess the project's environmental effects. Irrespective of its scale, he says the objective of the HS2 EIA is the same as for any assessment: "You have to produce compliant documents." He noted that legal advisers were on hand to confirm adherence to relevant environmental legislation and parliamentary procedures.

Coventry explains that he or Johnson had to sign off every document submitted by the EIA consultants and that a technical specialist "peer" review mechanism was established to ensure the correct approach was taken at all times. "On every occasion, we challenged the EIA teams to look at what they were doing in terms of compliance and using the right tools and processes." HS2 Ltd also has its own team of EIA managers and specialists. "They would check and challenge what we produced," he says.

Coventry believes that level of integration between the environment professionals and the engineers designing the HS2 route has been unprecedented. "There has been a willingness at the heart of the engineering and environment interface to get it right," he says. "In a way, that reflects a natural evolution in which designers have become more familiar with environmental issues and environmentalists have greater understanding about design. That integration has reached a new high on this project." An example is the re-use of surplus excavated materials from the tunnelling and cuttings that will be used to blend the railway into the landscape, restore agricultural land and help mitigate noise.

Ultimately, the environmental statement is a working document, says Johnson: "All the environmental mitigation and controls in the statement have to be implemented. The deemed planning consent granted by the legislation [when the bill becomes an Act] will guarantee that what is in the statement is taken forward. The provisions are like planning conditions in other schemes and cannot be ignored by the contractors."

Construction work on HS2 should begin in 2017. The first trains are due to start running on phase one of the line in 2026.

Assessing the opportunities

In our second examination of ESOS, **Maxine Perella** gets advice on how to generate the maximum benefits from scheme audits

The August issue of *the environmentalist* reported that the Environment Agency had received just 85 compliance notifications for the energy savings opportunity scheme (ESOS), indicating that most eligible firms had yet to embark on the energy audits that ESOS requires.

However, awareness of ESOS obligations appears to be growing, with external lead assessors reporting a sharp rise in enquiries. "The level of interest has gone up 1,500% in the past few months," says Darryl Mattocks, managing director of Enistic and a qualified lead assessor. That said, he anticipates a scramble as autumn approaches. "For some companies, there is a lot of work to do and not a lot of time. Typically, compliance will take two to four months to organise. For other companies, it could be a lot more. Plus, there is a limited number of lead assessors to work with, so not only is there limited time to get things done, there will be increasing pressure on finding a lead assessor with the time to do the job."

Lucy Candlin, an IEMA-registered independent leader assessor, says the pressure can be reduced by using technical experts to conduct the audits: "This means the lead assessor has more time to work across a number of clients, focusing on the compliance aspects; technical experts used in this way do not have to be registered."

Image: iStock

Not just a tick-box exercise

Given the time constraints, there is a danger some companies could treat ESOS as a hurried tick-box exercise – especially as there is no legal requirement to implement any of the energy saving opportunities identified in the assessments. That would be a mistake, according to experts.

George Richards, business and innovation manager at JRP Solutions, says the right approach is to view the scheme as a catalyst for change. "First and foremost, it's a mindset. ESOS should be a viewed as an opportunity, rather than a threat or a cost burden. For the majority of businesses, particularly those that are energy-intensive or have complex processes and with a significant energy spend, it will deliver good value."

Dr Steve Fawkes, an independent energy analyst, advises firms to get the most out of their ESOS assessment by using it to fully evaluate energy efficiency potential. "By that I mean go beyond the standard energy audit, which would be compliant, but probably not lead to much action," he says. "I would encourage top-level decision makers to demand that the audits evaluate all the benefits, including the non-energy benefits such as productivity, health and employee satisfaction. This requires a much more integrated and wide-ranging approach than the traditional energy audit."

Identifying and calculating both the total and significant areas of energy consumption across the business for auditing purposes is key. As a practical starting point, Fawkes says firms should start collecting energy consumption and cost data from billing meters, and consumption data from any sub-meters installed. "Collect machine, HVAC [heating, ventilating and air conditioning] and lighting plant data, and estimated run times," he adds.

Knowledge gap

Qualified lead assessors should be capable of facilitating any necessary data requirements, but there are concerns – especially among those organisations that have more complex energy needs – that some assessors may lack the necessary skills and specialist knowledge.

Jesse Putzel, senior sustainability manager at construction firm BAM, says companies should be looking for a provider that is most likely to understand their business. "For construction, we believe we know our business better than anyone, so it doesn't make sense to have someone carry out lots of audits for us. We've already done that work to a large extent. We've chosen an organisation we trust and developed a spec with them that won't cost the earth, but will develop value. In speaking with peers, we've already heard about many assessors charging exorbitant fees."

Putzel adds that, although BAM could have appointed an in-house lead assessor, it was felt a third party could deliver better value. "We believe this lends weight and, as we're using existing activities to demonstrate compliance, we want a 'critical friend' approach to identify areas for improvement."

Fawkes says companies should be questioning the level of relevant experience an assessor has in their particular sector or technology area, but equally recognise any parallel sector experience that may be helpful. "Deep experience within a sector is important as it can result in knowledge of the industry sector best practice," he notes.

However, Candlin argues that, although sector experience is important, the audit team needs to contain a range of skills and knowledge. "For large or complex organisations, the technical skills required to conduct relevant and effective energy audits across processes, industrial equipment, transport, buildings and behaviours may well not rest with one person or one consultancy," she says. "The lead assessor needs to evaluate what is required and bring together a team with the necessary skills. Compliance across all requirements may be as much, or even more, important."

Trusted support

Like BAM, investment firm Aberdeen Asset Management has also chosen an external lead assessor it trusts to provide ESOS support for both its real estate investment assets and its corporate-occupied assets.

"We do not have the necessary technical skills internally, and as such outsourcing this requirement was logical," says Dan Grandage, Aberdeen Asset Management's head of responsible property investment. "We appointed WSP group to assist [the company] with this process as we have an existing relationship with them, and they are already working closely with us on the implementation of our energy management programme and our wider ISO 14001 environmental management system.

"What we are looking for is someone that can add value to our activities and genuinely understand both our business activities and how buildings are designed and operated."

Grandage says it has taken about 12 months to identify and collect the data needed for the energy audit but, because it was undertaken as part of a wider energy management initiative, the requirements were not that onerous. However, Aberdeen Asset Management has encountered some specific data challenges believed to be typical of the wider investment industry. "The first challenge was to understand the organisational structure of our funds – both real estate and other investment vehicles – and establish which funds meet the qualification tests, and then who would undertake the compliance activities – Aberdeen Asset Management or our clients," Grandage says.

Another issue, which also affects asset management firms such as Aberdeen, is that ESOS not only captures real estate funds, but other investment vehicles that do not have an associated energy supply. "Having to make a notification for ESOS for an entity that does not consume energy does seem an unnecessary administrative burden," Grandage says. He believes this could be avoided by making some minor changes in the guidance, and would be consistent with the approach taken elsewhere in the EU.

BAM identified data as a key issue in 2008, when it started assessing its carbon footprint. Since 2010, the company has rolled out remote metering

ESOS – getting ahead of the curve

Companies that intend to make the most of their energy savings opportunity scheme (ESOS) assessment by acting on the recommendations suggested may benefit from a new digital platform called The Curve. Developed by sustainability thinktank The Crowd, this interactive database allows organisations to share their carbon and energy investment data so they can benchmark technologies and solutions against each other, and assess which ones are likely to offer a good return on investment.

By logging on to The Curve, users can identify other businesses that have made similar investments to those their organisation is considering. They can also compare their own energy investment programme with that of their peers, and learn from what others are doing. Analysis of the data, which is submitted anonymously, maps trends across 12 types of technology areas, such as energy spend, payback threshold, star rating and supplier recommendation.

The Curve also highlights added benefits, such as brand enhancement and employee engagement.

For more information about The Curve, visit thecurve.me

across its sites, enabling it to gain visibility of energy consumption and to target energy waste. The latter is a significant issue in the construction industry.

"I think the ongoing challenge for us is the issue of identifying the 'lifecycle cost' element as there is no real baseline to work from in construction – it's all based on assumptions or comparisons with previous projects," says Putzel. "We've developed power planning, where we predict the demand of a project before we start, so this helps. We've also monitored specific plant and equipment, and then run trials to test innovations. However, traditional lifecycle costing, in the way ESOS would have you do it, probably isn't right for us. We'll be working with our assessor to address this."

Cost saving is important, but not as important or attractive as revenue generation. Companies are facing many demands on their capital

Business benefits

A criticism commonly thrown at ESOS is that it is a light-touch regulation. Although it might empower energy managers to put forward a stronger business case for investing in energy efficiency, ultimately many businesses remain unconvinced that they would benefit from the process.

"We have to recognise the facts," says energy analyst Fawkes. "Energy efficiency is boring. Cost saving is important, but not as important or as attractive as revenue generation. Companies are facing many demands on their capital."

Richards says he can empathise to a degree with the scepticism. "For some businesses, ESOS will deliver little or no value. I think that's unfortunate," he says. "However, for the majority of businesses, from our experience, it's quite the opposite. What ESOS will do is identify a suite of improvement opportunities and they should then feed into an overall plan or strategy. For me, this isn't about legislation; this is about making companies engage, focus and think about energy."

Sandra Norval, head of environment at Govia Thameslink Railway, sees ESOS primarily as a tool to try to kickstart the laggards in the field of improving energy efficiency. "It will do that for some but, without the incentive to act, there will be some that just tick the box by getting audits done and leave it at that," she warns. "The frustrating thing is that potentially there will be great ideas that could deliver significant energy savings that will just left in a filing cabinet."

Govia, a joint venture between transport companies the Go-Ahead Group and Keolis operates four UK rail franchises – GTR, Southern, Southeastern and London Midland. It opted for the ISO 50001 route to ESOS compliance. 50001 is the international energy management standard and in effective includes all the requirements of ESOS. Although it is too late to obtain certification before the December deadline, 50001 should be an option for the future. "I would have advocated the 50001 option," Norval says. "For me, it offers the best business benefits. It's all very well paying for audits but, as there is no requirement to take the identified actions [of ESOS], it's unlikely that the best use of the findings will be made in all cases."

Reflecting on her organisation's journey so far, she adds: "The ultimate lesson is that 50001 is a tool when you look at it on the page but, when you read into the essence of its intentions, it is actually about culture. That is the biggest difference from ESOS. The energy savings opportunity scheme ticks boxes; 50001 enables change."

The energy management standard is not for every organisation, however. The standard is regarded as the more resource intensive option and, depending on the business activity, it may not be perceived as adding any extra real value when considered alongside ESOS. It is likely that most eligible businesses will be undertaking ESOS assessments – at least during the first phase – and should hopefully benefit from the structured approach it offers.

"It's really up to the organisation to approach ESOS positively," Putzel observes. "I think it's right that it has a light touch, but it could probably do with a few more teeth – like being required to publish whether or not you've taken action on recommendations. As a company that has already done a lot, albeit with an opportunity to do more, I'm glad that we're not overburdened with very prescriptive rules."

Grandage echoes this view: "It would be a waste of time and resource if the opportunities identified are not followed through where they are cost-effective and practicable. In our experience, the potential energy savings identified more than outweigh the cost of compliance."

Maxine Perella is a freelance journalist.

The Environment Agency ESOS helpdesk can be contacted at ESOS@environment-agency.gov.uk.
A list of IEMA members who are qualified as lead assessors is available at lexisurl.com/iema103002.

Making connections

Jiggy Lloyd on how the scientific understanding of ecology, and what it has to teach us about an interdependent world, has been applied to other fields such as the finance sector

After the onset of the 2008 financial crisis, the Bank of England took advice from ecologists. For me, this was a milestone event in the history of a discipline that, more than any other, recognises the connected nature of the world. This interconnectedness lies at the heart of so many of the big issues faced by environment and sustainability professionals.

A history lesson

Ecology is usually considered a relatively new science that takes a holistic approach to the environment, and is often cited as a late 20th century phenomenon. The term, which comes from "oecology", was actually coined in the 19th century by the German biologist Ernst Haeckel, although others did more to advance the discipline as we know it today.

But ecology has a richer history, which goes back to the natural philosophers of ancient Greece. It was probably the botanist Theophrastus, if not his tutor Aristotle, who was the first to observe and define the ways in which plants respond to environmental factors, such as climate and soil. The natural philosophers were also preoccupied with the ordering of nature; and it was this thinking that continued into the Middle Ages and Tudor times, with a focus on the "Great chain of being" – the hierarchy that began with God and descended via archangels and "man" to animals and plants, and finally to minerals and stones.

The 17th century cleric and naturalist John Ray was an exponent of the way in which nature worked as a whole; while Mark Catesby, who is best known for his wildlife illustrations, used his travel to the "New World" and membership of the Royal Society to draw attention to associations between species.

The Enlightenment and the 19th century were also preoccupied with the ordering and classification of nature, a process that sometimes helped but often hindered appreciation of its interdependence. However, the work of naturalist and explorer Alexander von Humboldt centred on the concepts of unity and interdependence, and it is not surprising that he is often cited as the father of modern ecology. He was tutored by followers of the philosopher Immanuel Kant, who himself resisted the tendency to focus on classification and separation. Von Humboldt travelled extensively in Europe and South America, collecting specimens, measuring temperature

Image: iStock

Alexander von Humboldt: the father of modern ecology?

and air pressure, and observing the variations in vegetation that occurred with physical changes. Most of von Humboldt's career was devoted to publicising his view of nature as "unity in diversity, and of connection resemblance and order, among created things most dissimilar in their form, one fair harmonious whole".

Charles Darwin cited von Humboldt as the major influence on his life, and an appreciation of the interlinked nature of the universe is evident in *On the origin of species*. But, while not belittling the influence of Darwin or of his fellow theorist Alfred Wallace, it is the case that they focused largely on competition as the force that drove evolution; while environmental selection was implicit in their concept of "struggle for life", it received less attention.

The Reverend Gilbert White, in contrast to von Humboldt, espoused no grand theories and travelled little beyond his parish in Kent. However, his record of the natural history of Selborne – with its observations on the interplay of weather, habitat and species – is no less remarkable for its domesticity. White's musings on the constancy of the swift population from one year to next may appear particularly relevant when we come to consider the Bank of England.

From the second half of the 19th century onwards, the field of natural sciences grew to the extent that it was increasingly difficult for one individual to embrace it all. There was, therefore, a tendency to specialisation – a hazard that remains to this day. Science became professional, but it was largely the "traditional" disciplines of botany, zoology and geology that flourished; "natural history" was relegated to the status of hobby. Although this was crucial to the development of the popular conservation and environmental movements (about which more in a future article), the study of the functions of nature has perhaps received less attention than it deserved.

Nevertheless, there were advances and – at the risk of oversimplification – five names are particularly worth noting.

Danish botanist Eugen Warming is often cited as the man responsible for establishing ecology as a scientific discipline. His work on plant community responses to their environment was notable at the time, and had a significant influence on both Henry Cowles and Frederic Clements. Working in the US, these men made significant advances in the understanding of plant succession, which in turn became the basis for the emerging profession of conservation management.

Clements' theory of climax vegetation likened the relationship between the species in a plant community to that between an animal and its organs; it was not without critics at the time, but his metaphor is interesting for its parallel with that used in the 1970s by James Lovelock in the Gaia hypothesis, which asserts that the Earth is a self-regulating complex system.

Warming also inspired Arthur Tansley, who was instrumental in establishing ecology in the UK in the first part of the 20th century. Tansley also introduced the term ecosystem and hence formalised the view that organisms cannot be separated from their physical environments. At the same time, Charles Elton was applying scientific method to the study of animals in the natural world. His work on food chains and the ecological niche laid the base for our current understanding of population dynamics. His work had practical applications in his lifetime, particularly combating invasive species; however, it also – more unusually – provides the link to those ecologists who advised the Bank of England.

The global financial meltdown

In the 1970s, an Australian theoretical physicist called Robert May applied his expertise and his interest in environmental issues to challenge the then widely held view that diversity and complexity in ecosystems made them more resilient to "perturbations" or disturbance. His mathematical modelling of food chains demonstrated that the "balance of nature", a popular concept among ecologists in the 1960s, was somewhat illusory and that too much complexity could lead to instability.

After the financial crash in 2008, May, by now a former UK chief government scientist, presented Mervyn King, the then governor of the Bank of England, with his model of the banking ecosystem. In this model, the nodes – which had represented species in the ecological version – represented the banks; the links between nodes were activities such as interbank lending. May and his team used their model to demonstrate how the banks' extreme vulnerability to those events that started with the collapse of Lehman Brothers in the US had come about.

The model was so effective in explaining the sources of risk and vulnerability in banking, revealing the folly of the financial sector's belief in a general equilibrium and exposing the particular risks associated with the market for complex derivatives, that it has led to a lasting cooperation between the two disciplines. Senior staff in the bank now include one of May's former students; and measures in the current package of banking reform – for example, the requirement for higher capital reserves to combat instability – can be traced to advice from the ecologists.

The American scientist Jared Diamond has argued: "Globalisation makes it impossible for modern societies to collapse in isolation." When *the environmentalist* went to press, both the Greek financial crisis and the spread of international terrorism remained major issues in the news. So as you ponder the implications of all this interconnectedness, be thankful for those who have advanced our understanding of a fact fundamental to the values of the environmental profession, and which is now recognised elsewhere: the world and its inhabitants are all interlinked.

Jiggy Lloyd is an independent environmental consultant. She is a former non-executive director at IEMA. For more information go to jiggylloyd.co.uk.

Mutual benefits

In the run-up to a two-day workshop on industrial symbiosis in Birmingham, **Peter Laybourn** highlights what's new in the field from around the world

This year is proving to be pivotal for industrial symbiosis. It has been 10 years since the National Industrial Symbiosis Programme (NISP) officially launched in the UK, and globally the appetite for replicating its approach continues to gather pace.

Experts at consultancy International Synergies have taken the NISP model to create a blueprint for replication around the world, regardless of economy or culture. Although other examples of industrial symbiosis exist, the model is proving to be the most effective for its applicability at scale and for generating rapid results. It brings together producers and users of waste resources with innovators and entrepreneurs to deliver innovative solutions to business problems and accompanying environmental benefits.

A systems approach

Part of the NISP's innovation is that it applies a systems approach, holistically addressing not just material "waste" but also energy, water, logistics, capacity and expertise – indeed, any underused assets. The programme's engagement model also creates opportunities for deploying additional circular economy tools, such as ecodesign and cleaner production.

Between 2005 and 2013, the NISP was actively engaged with more than 15,000 companies in the UK. Opportunities identified and facilitated by the programme in England generated £1 billion in sales and achieved cost reductions of £1.1 billion for the participating companies, largely small and medium-sized enterprises (SMEs). It also reduced carbon emissions by 39 million tonnes, diverted 45 million tonnes of material from landfill, and saved or created more than 10,000 jobs. These figures have all been independently verified and, compared with other programmes supported by the government, the NISP produced a much higher rate of return.

In April, the Foreign and Commonwealth Office (FCO) supported International Synergies to work with the UN's environment programme (UNEP) and associated national cleaner production centres (NCPCs). It was to provide them with the expertise and tools to implement facilitated industrial symbiosis as part of their existing activities. Initially, the project will develop pilots with NCPCs in Asia, Africa and South America, but its main aim is to establish a framework to foster a global industrial symbiosis programme. This could include all countries eligible to receive official development assistance, helping enterprises, especially SMEs, to adopt more eco-innovative business strategies.

Going global

Meanwhile, the regional Global Green Growth Forum (3GF) meeting in Kenya in May focused on addressing growth issues for countries in Africa. Two years ago, 3GF adopted industrial symbiosis as a core area of activity. Led by International Synergies, the aim was to explore how public-private partnerships (PPPs) can advance green growth around the world. The meeting in Kenya highlighted the implementation so far of industrial symbiosis in Africa and developed further actions to advance it across the continent.

In 2013, the regional government launched the Western Cape Industrial Symbiosis Programme (WISP) in South Africa. GreenCape, a "special purpose vehicle" set up to support the green economy, has delivered the WISP, with support from International Synergies. The success of the scheme has been the catalyst for

Image: iStock

Industrial symbiosis in action – Turkey

International Synergies was a key partner in the Iskenderun Bay industrial symbiosis programme. The project was financed by BTC Crude Oil Pipeline Company in Turkey and managed by the Technology Development Foundation of Turkey (TTGV).

Fruit juice concentrate producer Limkon Food Industry and Trade generates around 12,000 tonnes of fruit pulp waste each year as a by-product of its process, and it wanted to find a way to reuse the material rather than sending it to costly landfill. The project team identified an opportunity to bring in researchers from the Faculty of Agriculture at Çukurova University to test potential ways to treat the pulp and make it suitable for reuse. At the same time, another business member of the programme, Akay Mining Industry Foreign Trade, wanted to find an outlet for the waste heat its facility produced during the manufacture of lime.

Researchers at the university carried out tests to dry the fruit pulp waste using the waste heat from Akay Mining's production process, successfully transforming the material into animal feed. The nutrient composition and energy value analysis proved that the quality of the animal feed end product was high, which was critical to the full commercialisation of the scheme.

Implementing this three-way synergy redirected 115 tonnes of petroleum coke waste heat; reduced annual carbon dioxide emissions by 3,500 tonnes; reused 12,000 tonnes of waste pulp each year; and produced 1400 tonnes animal feed for reselling.

The success of the project has resulted in the Turkish ministry of development and its regional agencies adopting industrial symbiosis as a tool for regional development.

Image: iStock

implementing industrial symbiosis elsewhere in the country, and there are now similar programmes running in Gauteng and KwaZulu-Natal provinces. Staff in all three provinces have received training from International Synergies and held cross-sector industrial symbiosis workshops. Ndivhuho Raphulu, director of the NCPC of South Africa, says the approach "aligns very well to the aims of the cleaner production centre, providing means to engage with companies, together with structured processes and support tools, to increase resource efficiency through the identification of new business opportunities that exploit currently underutilised resources".

The level at which industrial symbiosis has permeated South Africa is illustrated by the presence of Helen Zille, the premier of the Western Cape government, at a WISP workshop in June, part of Synergy Day hosted by the administration's 110% Green programme. South Africa is now on the way to having its own national programme, which will form part of the federal government's national industrial symbiosis strategy.

In June, the European commission, through SWITCH Africa, agreed to support a three-year programme to develop an industrial symbiosis network (again based on NISP) in Ghana. International Synergies and its African partners have also been invited to submit a second stage proposal to SWITCH Africa that, if successful, would involve building industrial symbiosis capacity in a further six African countries.

Elsewhere, China is in the process of implementing its third regional scale industrial symbiosis project, the most recent being in Jiangsu province. International Synergies is also working with stakeholders in the province of Hubei to develop a circular economy strategy for the region. And, in South Korea, International Synergies is building on its relationship with the Korean government through the Korea Industrial Complex Corporation (KICOX), a specialist in industrial eco-parks, by signing a memorandum of understanding on wider collaboration.

In Europe, the inclusion of industrial symbiosis as an exemplar to deliver a resource efficient economy in commission policy is helping to pave the way for new programmes. International Synergies is a partner in NISP France, which was formally launched in May 2015 with l'Institut de l'économie circulaire and is funded by ADEME – the French environment and energy management agency – and a number of French provinces. International Synergies' work in Finland and Denmark has supported programmes that have moved from a regional to a national scale. And, regional projects continue in Belgium, Italy, the Netherlands, Northern Ireland and Turkey, where industrial symbiosis is incorporated into regional economic development strategies.

Recommendations calling for industrial symbiosis to be taken up at a global level continue. This year alone, the NISP, which first referred to the circular economy in 2004, has been cited as best practice for delivering

Industrial symbiosis in action – Finland

The Finnish Industrial Symbiosis System (FISS) was launched in September 2014, after a one-year pilot that tested the methodology and engagement model developed by the UK's National Industrial Symbiosis Programme (NISP). The pilot concluded that a cross-sector industrial network, coupled with facilitation experts working to identify and drive forward resource synergies, would work effectively in Finland. Motiva, a government agency specialising in energy and material efficiency, fulfils the role of national coordinator, with regional partners supporting businesses in their respective areas.

KWH Mirka is a global manufacturer of high quality abrasive products, accessories and grinding systems, which is a resource intensive and high waste producing industry. The company is committed to developing renewable energy based abrasive technology to create a more sustainable, circular business model.

To this end Mirka, working with Ekokem commercial power plant, has created a new technology for the production of abrasive minerals based on integrated bioenergy production and material recovery. The technology enables the recovery of energy from the by-products of sandpaper production at its plant in Finland – around 3,000 tonnes a year. The energy generated provides approximately 30% of the needs of Ekokem's power plants, drastically reducing Mirka's energy bills and landfill charges, and reducing its annual carbon footprint by 6,000 tonnes.

Mirka is looking at developing further new process technologies to upgrade its low-value feedstocks and waste streams to create high-quality raw materials that it can then reuse to produce flexible abrasives.

such a model by, for example, governments going circular, an initiative developed jointly by De Groene Zaak, the Dutch sustainability business association, with business service company Accenture and others. The Governments going circular report, part of the Global Scan series, highlights projects for their capacity to stimulate actions that nurture a circular economy. Both the NISP and WISP are featured in the top 30 of those identified, while the latter was also a finalist in the Circulars awards, which each year recognise individuals and organisations that have made a notable contribution to driving circular economy principles.

Additionally, EU research and innovation programmes – for example, POLFREE and DYNAMIX – have included industrial symbiosis in their top 10 recommendations for inclusion in the revised European circular economy package, which is due later this year.

The UK picture

Industrial symbiosis activity in the UK has declined, however, and there is no longer a national programme to support companies. The decline inevitably stems from 2009, when the government decided to channel its support through the waste and resources action programme (Wrap). The governments in Scotland and Wales have taken a similar approach. Nonetheless, in the West Midlands International Synergies continues to create jobs and assist businesses to implement resource-efficient practices by bringing them together with companies from different sectors in an industrial symbiosis network. This work is supported through the European commission's regional development fund.

Looking ahead in the UK, there is optimism that, because industrial symbiosis has the ability to deliver "green" growth and jobs, while lowering environmental impacts, some form of joined-up, multi-regional network could emerge under the auspices of local enterprise partnerships. Birmingham City Council has been pioneering in its approach by adopting the concept in its big city plan, a 20-year vision to create a world-class city centre that delivers sustainable growth. Also, the council, with the support of Defra and the FCO, recently used NISP's evidence base to bring the G7 workshop on industrial symbiosis to the city. To be held at the end of October, it will be the first major event hosted by the G7's alliance on resource efficiency, which launches in September and aims to promote cooperation on ways to deliver sustainable growth.

So far the NISP has been replicated in regional or national form in 25 countries on five continents and has garnered the support of institutions such as G7, OECD, UNEP and UNIDO. The strapline we developed for NISP in 2002, "Connecting industry – creating opportunity", remains as valid today as it was then.

Peter Laybourn is chief executive of International Synergies and founder of the National Industrial Symbiosis Programme – international-synergies.com; @IntlSynergies on Twitter.

Chief executive's blog – 'No time for deliberation'

iema
Institute of Environmental Management & Assessment

In his latest open message to IEMA members, **Tim Balcon** urges them to take full advantage of the professional development path laid out by the institute to achieve the professional recognition that they deserve

You told me when I first joined IEMA that you wanted your institute to have a higher profile and to have greater impact. We are making strong headway but we still have a way to go. But I need you all to do your bit.

The relevance of our profession has never been stronger and more resonant. Our *Preparing for the perfect storm* report highlighted just how strong is the need for environment and sustainability skills, and will increasingly be. Businesses are buying into the case we are making for a surge in skills, with many using the IEMA skills map to set their standards.

The media are really starting to get the message about the value of your skills. It's genuinely an exciting time, but we are far from achieving the heady heights of our goal.

We are the largest professional body for environment and sustainability professionals but with a large mass of members at Associate level. That is great; it very clearly demonstrates to the wider world that we have a significant number of qualified, skilled, passionate and capable professionals in our midst. However, I believe there is huge potential – massive in fact – in the IEMA membership to have many more members at Full level.

Full membership is not just a "rank", and this isn't part of a cynical push to change the weighting of where the mass of members currently lies. It is about ensuring that every single member gets the professional status, respect and recognition for their skills that they deserve comparable to the universal understanding of senior accountants or engineers. Full membership is the signifier of someone who has not only gained a wealth of practical and theoretical knowledge, but can match that with experience, leadership capabilities and a track record of influence. From the members I've been lucky enough to meet, the overwhelming majority display these exact qualities but do not possess the professional status reflecting their knowledge, capability and experience.

We are doing our bit to help encourage more to upgrade: we have taken away the fear of the interview, making it a better peer-to-peer experience. With our mentoring service, Associate members are better supported through the process and there is advice and guidance offered all the way by the team here at IEMA. I realise that even applying for Full membership and preparing yourself for the interview takes time and effort – not forgetting a certain amount of guts – but I sincerely hope that, if you are one of the members I've spoken to who has not yet got around to applying for full membership, you will reconsider. The time has never been more important for qualified environment and sustainability professionals, so let's reposition our influence on business so that together we transform the world to sustainability.

There is huge potential – massive in fact – in the membership to have many more members at Full level

We cannot – individually or collectively – rest on our laurels if we are to achieve our goals. The time is right for us all to up our game so I would really urge you to seize the opportunity to get the marker of your experience.

If you are aiming to upgrade your membership visit iema.net/membership-upgrade to explore the various support options available. Alternatively, call your IEMA professional development adviser Sarah Amos on +44 (0)1522 540069.

Early bird booking for upcoming IEMA conferences

Image: iStock

Sustainability in practice

13 October 2015, London

National sustainability conference organised with South East and East of England regional groups

This event aims to take delegates outside their environmental comfort zone, supporting them to return to work with confidence to face up to the sustainability challenges they will increasingly face.

The day's presenters include sustainability leaders who have experienced similar challenges in their organisation to those facing many environment and sustainability professionals. They will inspire delegates to turn the challenges into opportunities, talking tactics and practical applications.

This conference is designed to be different: it is delivered by peers, for peers. It is pitched in a "real-world context" that will assist delegates to make a difference in their own workplaces.

Early bird rate – £150 + VAT – expires on 22 September.
events.iema.net/events/view/MTY5

EIA and ESIA masterclass sponsored by Royal Haskoning DHV

3 November 2015, London

Enabling sustainable infrastructure – focusing the power of EIA/ESIA

Project level environmental and social impact assessments are the core tools in enabling the sustainable delivery of critical infrastructure and major developments around the world. This conference will give delegates unique access to experts, as they share their knowledge and experience of delivering assessments that are fit for the dual purpose of achieving regulatory consent and securing financial investment.

The main sessions will provide leading thinking on critical areas of practice, including proportionate EIA, climate resilience and the future of ESIA.

By the close of the conference, delegates will have learned about leading examples of practice from around the world.

Early bird rate – £195 + VAT – expires 10 September.
events.iema.net/events/view/MTcw

EMS national forum

1 December 2015, Manchester

Enhancing performance through the revised ISO 14001: strategy, risk, resilience and improvement

The revised ISO 14001 standard will challenge many existing users – whether it's aligning their EMS to support the strategic direction of the business, taking a life-cycle perspective to drive product improvement, or working with supply chains and customers to reduce environmental impacts.

This conference will help delegates to understand and implement the new standard. They will hear from representatives of leading organisations on how they are tackling the transition, find out the approach certification auditors will take when assessing the new requirements, and gain insights on how to engage leaders in driving performance improvement.

Early bird rate – £195 + VAT – expires 30 September.
events.iema.net/events/view/MTY0

Help IEMA to become more efficient

Since the new online payment portal was activated on 3 August, members switching to direct debit payment have helped the institute to make 2kg of CO_2 efficiencies.

The online portal makes renewing your membership quicker, easier and more convenient than ever. A key new feature is the facility to activate payment by direct debit with one simple, clear online form. Previously, opting for payment by direct debit involved downloading a form and submitting this back to IEMA for processing.

Members said they wanted the service to be improved and the new online portal supports this. Paying by direct debit also helps IEMA to make efficiencies on paper use and administration time. Each direct debit renewal saves one piece of paper, an envelope and three minutes of administration. If the entire IEMA membership renewed this way, the institute would save the equivalent of one whole tree each year, and it would help to make IEMA 33% more effective in building a sustainable future.

This shift makes a small but significant contribution towards our aim to transform the world of work to sustainability. It means IEMA "lives the values" that members expect from their professional body. It is also the most cost-effective way for members to renew – set up your direct debit and you will automatically benefit from a £5 discount on your next renewal. It doesn't matter when your renewal date is; you can activate your direct debit today and the discount will be applied, ready for when your payment is due.

Visit iema.net/member and click renew to set up your direct debit and that will be the last action you will ever have to take to keep your membership running.

Please note that, because of the new and improved payment options, IEMA will no longer be accepting payments by cheque from 1 January 2016. If you usually pay by cheque and need to discuss your options, contact the membership team on +44 (0)1522 5400069 or email info@iema.net.

Policy update

Working on ISO standards

The ISO technical committee TC207, which is responsible for environmental management, meets in New Delhi in early September. And, while attention has been focused on the revised ISO 14001, which is due to be published on 16 September, developments in other areas are also important.

Standards have a key role to play in helping to tackle climate change and focus is being given to supporting the outcome of the climate summit in Paris in December. Standards in the ISO 14060 series on quantifying and reporting greenhouse-gas emissions and removals, at organisation and project levels, are being revised. New standards to support adaptation to a changing climate and organisational resilience are also being developed. Monetary valuation of environmental impacts is another area being considered for standardisation. The purpose is to harmonise the process from specific emissions and use of natural resources, and increase transparency for the users of valuation outcomes. The aim is to increase the awareness, understanding and transparency of monetary valuations and the benefits they offer. Potential users include companies in the industrial, finance, consulting and retail sectors, as well as government departments responsible for purchasing, taxation and regulations.

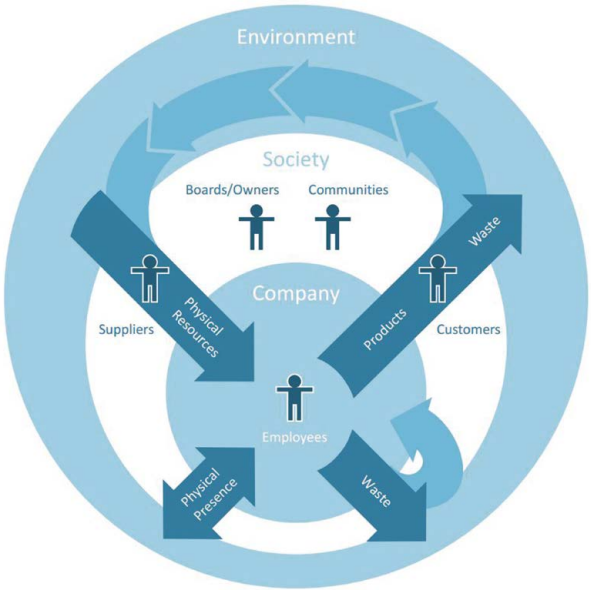
The publication of standards for topic-specific environmental footprinting – water and carbon have been published as ISO 14047 and ISO TR 14067 respectively – poses questions on how best to communicate to potential users the benefits. ISO 14026 is being developed to standardise how to communicate environmental footprints. The publication of the revised 14001 will prompt revision to ISO 14005 on the phased implementation of an EMS. Although this will take time to develop – with publication possible in late 2017 or early 2018 – the guidance on implementing an EMS (ISO 14004) is expected to be published early next year.

Martin Baxter is chief policy advisor at IEMA; m.baxter@iema.net;@mbaxteriema

GACSO briefing

A timely initiative for sustainability professionals, says Phil Cumming

GACSO empowering the corporate sustainability professional



IEMA's work over the past year or so to build a shared understanding of sustainability has helped confirm a feeling I've had for a while. Collectively – as a profession – we're not even vaguely swimming in the same direction.

Although the general concept of sustainable development is I'm sure understood, if we're honest, in reality, we've failed to operationalise this. We might be good at identifying, managing, and perhaps even measuring multiple environmental, social, ethical and economic issues. But this is all generally very "here and now". It doesn't really tell us how far away a company is today from where it needs to be tomorrow and, indeed, whether such actions are even helping it progress toward a more sustainable future.

The future-fit business benchmark (futurefitbusiness.org), which is published under a Creative Commons licence, is a bold, new free-to-use tool that aims to help answer these questions. The benchmark has been co-created by Geoff Kendall and Bob Willard in collaboration with sustainability professionals from all over the world. Drawing from the best available natural and social science, the benchmark identifies eight system conditions that describe what a truly sustainable society would look like. These in turn have been translated into a set of seven business principles. In addition, 21 future-fit goals (or minimum performance thresholds) – described as ambitious but attainable – have been developed. The key global challenges (or megatrends) have even been mapped to the benchmark.

Collaborative working is essential if we are to find innovative solutions and achieve systemic change at the required pace. So it's great to see this initiative co-created and open-sourced.

Clearly the benchmark does not have all the answers – it would be unreasonable to expect it to. The second public draft was published in July and the authors are seeking a second and final round of feedback before they issue the first release later this year. The latest draft also includes considerations for defining key performance indicators for each goal and again encourages their co-creation. There is a call for organisations to pilot the framework too. So I urge you to take the opportunity to review the latest draft and get involved. If you think it isn't quite right now's the time to speak up!

Phil Cumming is an independent corporate sustainability professional and a member of IEMA's GACSO advisory group; @PhilCHike

More successful IEMA members

IEMA would like to congratulate the following members on recently upgrading their membership.

Associate

Nkemdilim Charity Ani, Aecogreen International
John A Atuke, Delta state Ministy of Envirnment
Charlotte Barlow, Tata Steel
Daniel Bates, Navitus Bay Wind Park
Adam Baudinette, Carter Lauren Construction
Judit Betancor, EncoCam
Elizabeth Birbeck, Atkins
Andrew Bodey, Portals
Emma Bonser, AECOM
Ifeoma Marian Bosah-Onyejekwe, Aecogreen International
Elizabeth Brassington
Ryan Brighton, Tetra Consulting
Darren Bromley, BAE Systems
Tina Brunt
Paul Byers, MoD
Ryland Cairns, Muntons
Ian Cardy, Selex ES
Yvonne Choong
Emily Ciezarek, Magnox
Leo Cleverdon, University of Northampton
Rebecca Clifton, Carillion
Helen Craven, Royal Haskoning DHV
Lee Daniel
Christopher Dixon, Tata Steel
Charlotte Docherty, Scotrail
Jeremy Elward, Tata Steel
Ngozi Emeronye, Inkas Environmental Protection
Heather Evans, Rider Levett and Bucknall
David Fitzsimon, Fitzsimon Building Services
Emmanuel Francis, Institute of Natural Resources, Environment and Sustainable Development
Rebecca Forster, NetPositive
Hannah Gonsalves, Pinewood Studios Group
Emma Green, Ramboll UK
Matthew Herbert, Tata Steel
Steven Hughes, Tata Steel
Darren Isaac, Tata Steel
Sara Jones, CELSA Manufacturing UK
Sulaiman Kamara, Shandong Steel
Godman Oyintonye Karimo, Nestoil
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Gregory Lloyd Gardner, Tata Steel
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Amy Scoins
Becky Shepherd, Cranfield University
John Shepherd
Anthony Shurey
Hayley Siers, AECOM
Paul Simpson, Dairy Crest
Stephen Skalecki
James Strain, William Grant and Sons Distillers
Gerard Sutton, G+A Barnie
Ruth Debrincat Tabone, AIS Environmental
Wayne Taylor, Tata Steel
Gemma Tilley, Amalgamated Construction
Fiona Torrance
Andrew Townsend, Tata Steel
Lucy Townsend, Building Design Partnership
Emily Turner, Tang Make Consultancy
Gerard Vallely, Crabtree PM
Chris Walker, Shanks
Ben Weldin, Arup
Rachel Whalley, Siemens Diagnostic Healthcare
Daniel White
Tim Woodward, MyFresh
Michael Worth, Joseph Ash Galvanizing
James Wright, Tetra Consulting

Full and Chartered environmentalist

Muhammad Ali, TfL
Rhodri Davies, Network Rail
Louise Fish, Kerry Foods
Andrew Green, University of Hertfordshire
Emily Hamilton, Grosvenor
Peter Ives, Network Rail
Victor Kouloumpis, University of Manchester
Shirley Miles, Darcy Spillcare Manufacture
Susanne Page, Ferrovial Agroman UK
Begonia Pedreira-Regueira, Defence Infrastructure Organisation
Paloma Algarra Resino, Network Rail
Clare Swift, North East Ambulance Service

Chartered environmentalist

Sam Jones, AB Agri

IEMA events

Date	Region/Time	Topic
14 Sep	Qatar	Networking
17 Sep	South East	Site visit to a LEAF marque certified farm
23 Sep	North West	Management of wastewater and waste
23 Sep	South East	CLT Envirolaw breakfast discussion series: taking business beyond compliance – ISO14001
23 Sep	Yorkshire and Humber	UK and European environmental rules and regulations update; social (Leeds); social (Lincoln)
29 Sep	Yorkshire and Humber	Understanding your leadership style
1 Oct	South East	Social (London)
7 Oct	Yorkshire and Humber	Air quality – small solutions a big problem
15 Oct	Yorkshire and Humber	District heating

EIA update

Supreme Court rejects EIA challenge

Two grain silos and a lorry park can be built near the River Wensum in Norfolk after the Supreme Court threw out a resident's objection. Matthew Champion claimed North Norfolk District Council had failed to carry out appropriate assessments of the development's impact on the environment and the river habitat in the event of flooding. The river is a special area of conservation.

In its rejection of the appeal, the Supreme Court noted that two flood risk assessments and an ecological assessment were prepared before council officers decided that a full EIA was not required. At that point the statutory bodies withdrew their objections and consent was granted subject to conditions, including monitoring the river's water quality.

The council had acknowledged that its initial screening decision was legally defective because it had not identified pollution prevention measures.

Image: Robert Hardi/REX Shutterstock

However, the court said that, although the conditions attached to the planning permission did not remedy the procedural shortcomings, there was nothing to suggest that the council's decision would have been any different had it followed the correct procedure. In dismissing the appeal, the judges said the only issue of substance was putting in place measures to achieve adequate hydrological separation between the site's activities and the river, and these had been agreed with the statutory agencies. The court said what had been required was an appropriate assessment of the pollution risk and this had been done.

EIA practice update with IEMA's Josh Fothergill

EIA and ESIA masterclass

IEMA is hosting a major impact assessment conference on 3 November in London. As well as keynotes from representatives of the World Bank and Crossrail 2, there will be sessions on:

- understanding the implications of art.5(3) – the so-called "experts" requirement – of the EIA Directive;
- climate resilience, health, ecological and social IA; and
- future practice: ESIA (with the EBRD and Barclays) or proportionate assessment (National Grid and the Environment Agency).

IEMA is pleased to announce **Royal Haskoning DHV** as its partner for the conference. Its position in UK EIA practice and in enabling responsible finance through its ESIA work make Royal Haskoning DHV a perfect match for this year's theme. On the day, delegates will be able to learn from its expert practitioners in a masterclass on delivering effective EIA for DCO applications. To book your place go to lexisurl.com/iema107201.

IEMA's impact assessment network

The IA network steering group has developed five new sub-groups. These cover the following topics and issues:

- **heritage** – how to better link specialists, EIA coordinators and others to improve practice and avoid being overly led by process;
- **traffic** – updating IEMA's 1993 *Traffic in EIA* guidance;
- **health** – to enhance knowledge and understanding before the EIA Directive comes into force;
- **scoping** – production of a core guide followed by bespoke guides for all development classes in Schedule 2; and
- **ESIA** – explore the need for a global framework on environmental and social competency between international finance institutions.

Contact network coordinator Peter Jones – p.jones@iema.net – if you want to get involved in any of these groups.

EIA research

Mitigation framework

Researchers in the US have developed a framework to address what they say is the lack of a systematic and unified approach for integrating ecosystem services with biodiversity into the mitigation hierarchy. In a study in *Environmental Impact Assessment Review*, the authors claim their integrated framework allows regulators to determine potential, cumulative impacts on biodiversity and ecosystem services at a landscape, watershed or seascape scale and to assess the compatibility of development with environmental and social goals. According to the study, there needs to be a move away from area- and habitat-based assessment methods for both biodiversity and ecosystem services and towards functional assessments at landscape or seascape scales. Such comprehensive assessments more accurately reflect cumulative impacts and variation in environmental quality, as well as social needs, it says.
lexisurl.com/iema105179

Effective SEA scoping

To support more effective scoping in strategic environmental assessment (SEA), researchers in Portugal have developed a framework to evaluate procedural effectiveness. It comprises a set of 21 criteria divided into six broad themes and was applied to 20 Portuguese SEA scoping reports through content analysis. The research found that mandatory issues were met and the scoping reports used mainly national guidelines. However, issues of public participation were often discarded and there is no evidence that scoping starts early in the decision-making process or, if it is, done concurrently. The researchers say the framework establishes best practice and can be adapted to different countries and planning systems to reflect their specific legal and institutional requirements. The study is published in *Impact Assessment and Project Appraisal*.
lexisurl.com/iema105183

Directory

Contributing to a circular economy

Two packaging companies have partnered in a bid to streamline their own production processes to reduce McDonald's waste kilometres by up to 20,000 per year. The waste trimmings from the manufacture of the restaurant chain's carton packaging, made by Delta Packaging, are now transported from its west Belfasthed office to Huhtamaki, supplier of McDonald's cup carriers, just 30km away, where they are remanufactured into biodegradable moulded-fibre products.

huhtamaki.com

Key water sector acquisition

RICARDO–AEA

Environmental consultancy Ricardo has announced the acquisition of Cascade Consulting, which specialises in the UK water industry. As a wholly owned acquisition of Ricardo plc, Cascade Consulting will become a new consultancy practice of Ricardo-AEA, whose services already include providing UK and international public and private sector clients with advice on climate change, water and resource efficiency, and energy use and supply. The acquisition represents an expansion of Ricardo-AEA's current water and climate change capabilities.

ricardo.com

What energy assessors need to know about the energy savings opportunity scheme

truck stops from MAPMECHANICS

A new regulatory requirement based on art.8 of the EU Energy Efficiency Directive, known as the energy savings opportunity scheme (ESOS), will have a major impact on how companies use, monitor and regulate their energy consumption. However, many businesses are still unsure of how it will affect them. ESOS is part of an ongoing government drive to make UK businesses more energy efficient and requires all enterprises employing more than 250 people will need to nominate a lead energy assessor, whose duty it will be to carry out and sign off a full energy assessment by 5 December 2015. Further assessments will need to be carried out every four years.

Mapmechanics is working with accredited assessors to provide expert input on the fuel-saving element of the audit. To find out how Truckstops can help energy assessors carry out ESOS assessments call 0208 568 7000.

truckstopsrouting.com

Lowering climate uncertainty will encourage climate action

Every five to seven years the Intergovernmental Panel on Climate Change (IPCC) produce a report outlining the state of our climate system and our best estimate of what it might do in the future. More than 800 lead authors, 1000 contributing authors, and over 2,000 experts from over 80 countries, contribute to the document, making it one of the most rigorous peer-reviewed scientific outputs on climate change. Yet there is still a lack of consensus over how much the climate will change.

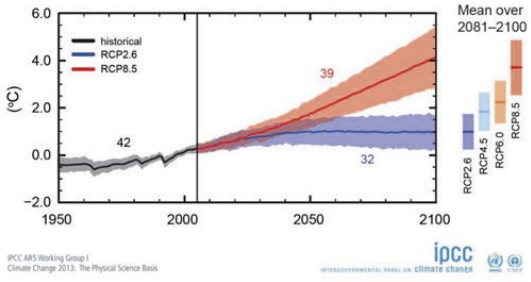

Figure 1 – Predicted global average surface temperature change

In the IPCC's latest report, the predicted temperature profile over the 21st century varied according to different emissions scenarios (see Figure 1). While it is still unclear as to the level of greenhouse gases that will be emitted in the future, the surrounding lighter shades on the graph demonstrate that the uncertainty associated with each scenario still varies widely.

Fortunately, new innovative techniques are being developed to reduce uncertainty levels within the global Earth Observation system. Until now, maintaining satellite sensor accuracy has been notoriously difficult due to the rigours of space flight.

A proposed satellite mission called 'TRUTHS' aims to solve this problem by mounting the pre-flight calibration system onto the satellite itself, allowing the instruments on board to be continually calibrated after launch.

Developed by the Centre for Carbon Measurement at the National Physical Laboratory (NPL) with a consortium of partners, TRUTHS could lower uncertainty in climate data by a factor of 10, allowing scientists to reliably identify climate trends in the shortest time possible. In addition, the on-board calibration system can calibrate other satellites, upgrading the global Earth Observation system through investment in this one satellite.

Our ability to implement effective adaptation and mitigation policies is in part hindered by current uncertainty levels around climate predictions. A concept like TRUTHS can improve our confidence in climate models by providing robust data, ultimately preparing us for the challenges of climate change and increasing our chances of successful adaptation.

Further information is available at **http://www.npl.co.uk/carbon-measurement/** and **http://www.npl.co.uk/truths**

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