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March 2016



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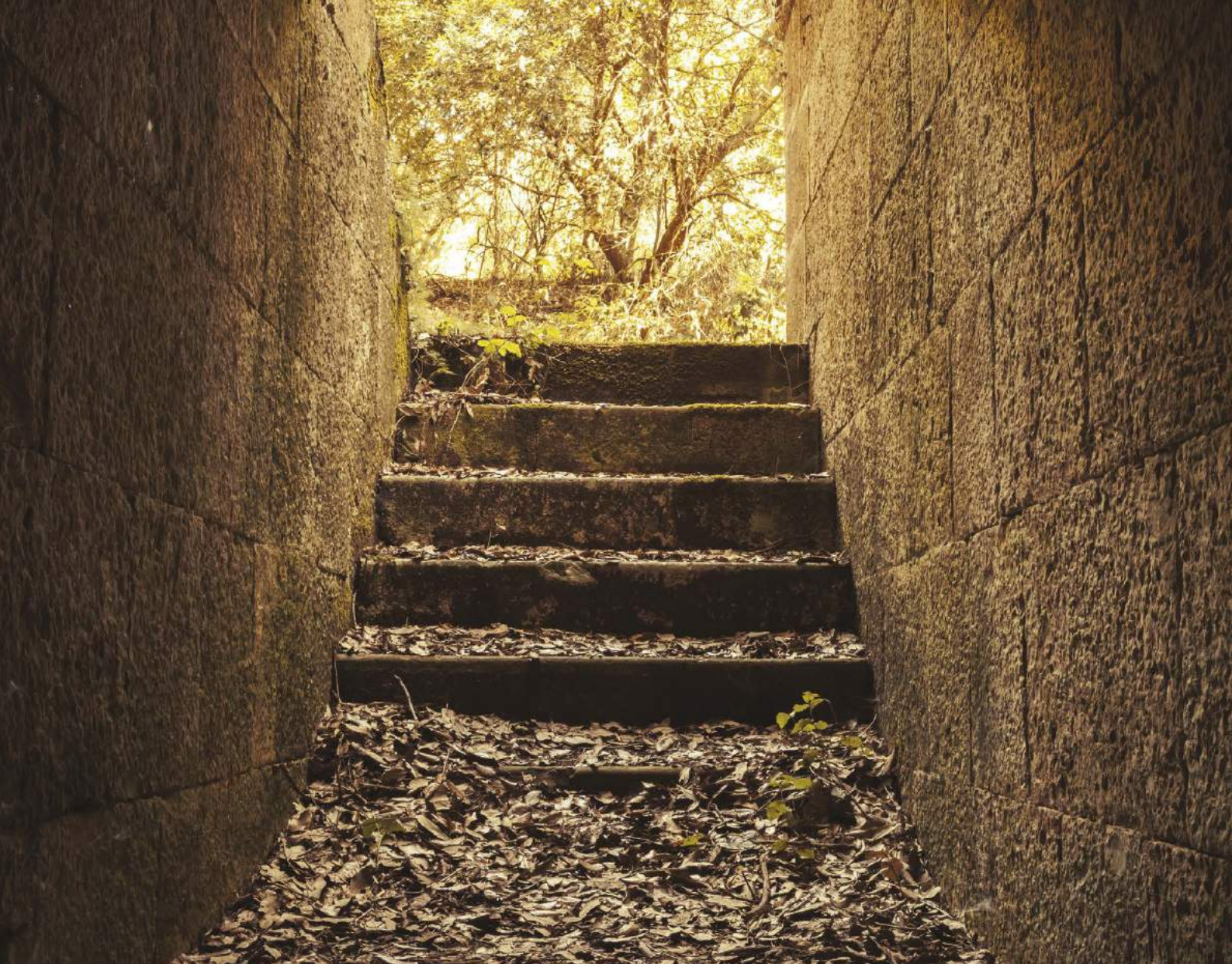
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The 'ins' and the 'outs'

With the date of the UK's EU referendum set for 23 June, I think it is fair to predict that we will be bombarded with information from the 'in' and 'out' camps over the next few months. We will hear a lot about the benefits of the respective positions, and obviously everyone will have a view on whether their working and family lives will be better in or out of the EU. But, in the end, will the result actually matter? The run-up to the Brexit poll presents an opportunity to observe how the environment and sustainability could be affected by the vote. If Britain stays, it will be business as usual. If it leaves, could we see big shifts in the way we work?

Legislation is a central driver for the environment profession, with various international agreements, national regulations and regional policies affecting the broadest and narrowest streams of environmental management and assessment. Members working in Europe are affected by legislation set by Brussels, so any shake-up could have a significant knock-on effect. Changes to the EIA directive are one example. Consultations are due to start this year on amending UK regulations to bring the revised directive into force by next spring. If the UK leaves the EU, will this crucial evolution of a major piece of legislation still take place? That's an open-ended question right now, and is just one of potentially thousands. So, although the questions remain unanswered for now, we can – as a profession – only do our best work for our own organisations and influence where we can.

Although potential Brexit could, in the short term, cause confusion, longer term I wonder whether it would really matter. The COP21 agreement will still stand and the UK would have too much to lose to renege on any commitments. What we need to remember is that our profession (and our network) is one of the few that takes a truly global perspective. After all, IEMA has members in more than 100 countries, so innovations made in Oman, Canada or Hong Kong, for example, influence practice as much as any EU directive. Legislation really is the lowest common denominator and many of the most impactful environment and sustainability innovations are driven by practice in businesses, not politics in Brussels.

Regardless of whether the UK electorate votes to stay or leave the EU, the result will serve as a reminder that legislation is important to our profession. But, as the experts, I think we should always aim to outperform what is in the law books, regardless of where the rules are written.

The referendum result will serve as a reminder that legislation is important to the profession. But, as experts, we should aim to outperform what is in the law books regardless of where the rules are written



Tim Balcon,
CEO of IEMA

The Institute of Environmental Management & Assessment (IEMA) is the professional home of more than 15,000 environment and sustainability practitioners from around the globe. We support individuals and organisations to set, recognise and achieve global sustainability standards and practice.

We are independent and international, enabling us to deliver evidence to governments, information to business, inspiration to employers and great stories to the media that demonstrate how to transform the world to sustainability. Join us at iema.net.

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Short cuts

Reporting collaboration

The Global Reporting Initiative (GRI) has launched a membership and engagement programme to share best practice on implementing the new global sustainable development goals (SDGs) and the Paris agreement. Its 'gold community' builds on the GRI's existing stakeholder programme and comprises companies and organisations across civil society, the business community and intergovernmental agencies. Nikki McKean Wood, director of corporate and stakeholder relations at GRI, said the aim was to 'intensely grow the membership' of the programme, which already has more than 550 members in 69 countries. The SDGs and the Paris agreement had brought in a new era for sustainability, she said: '[This requires] a transformational effort is needed by all, so we are seeking to increase collaboration.' Members of the GRI gold community have access to dedicated services, support and networking opportunities.

Scotland goes circular

The Scottish government has unveiled a circular economy strategy, which prioritises four areas: the food and drink industry; remanufacture; construction and the built environment; and energy infrastructure. According to the strategy document, *Making things last*, a more circular approach in the beer, whisky and fish sectors, for example, could lead to potential savings of £500m a year. It also forecasts that remanufacture, which already contributes £1.1bn a year to the economy, can grow by a further £620m by 2020. The report suggests that, because it accounts for half of all waste in Scotland, the construction sector is key to more efficient use of resources, while the economy would benefit from reusing equipment from wind turbines and decommissioned oil and gas platforms. The government is also aiming to cut food waste by a third by 2025 and says it will promote products designed for longer lifetimes as well as those that easily disassembled, repaired and recycled.

Wales backs environment law

The Welsh assembly has approved legislation that will bring in measures to tackle climate change, including a target to reduce carbon emissions by at least 80% by 2050.

Natural resources minister Carl Sargeant said the statutory climate change targets included in the Environment (Wales) Bill would accelerate progress against the government's headline targets, and help build resilience to climate impacts such as extreme temperatures and flooding.

'The passing of the bill will ensure that the sustainable management of our natural resources will be a core consideration in all future decision-making,' he said. 'The bill complements the Wellbeing of Future Generations (Wales) Act 2015 and the Planning (Wales) Act 2015. Together, they put in place the framework needed to secure the long-term wellbeing of Wales.'

Emyr Roberts, chief executive at Natural Resources Wales (NRW), said the legislation, which is expected to come into force next year, would put Wales in a better position to manage its natural resources in such a way to tackle climate change, biodiversity loss and sustainable land management.

The bill also includes provisions to improve waste management in Wales with powers to take action to achieve more recycling of business waste, food waste treatment and energy recovery.



Under the law, businesses, schools and hospitals will have to separate recyclable waste for collection or face prosecution. It gives Welsh ministers the power to ban some materials from being incinerated to generate energy and to extend the levy on supermarket carrier bags to 'bags-for-life'.

The legislation requires NRW to report every five years on how well Wales is looking after its nature, land, water and air. The regulator will also have to produce area reports on conditions in local environments.

Decc acts on energy security

The energy and climate department (Decc) has brought forward the next capacity auction by one year to avert an energy supply crunch. Decc said UK energy market conditions had changed considerably since the capacity market was designed in 2014, with global commodity price changes and the closure of several coal-fired power plants.

Two auctions have so far been held under the capacity market. The second resulted in contracts for 44.5GW of existing plant, mainly gas, coal and nuclear, and only 2GW for new build. The new plants will not deliver energy until 2018/19 and 2019/20, so Decc is proposing to hold an auction next winter for delivery in 2017/18. The department will decide the precise capacity target

for the auction after seeking advice from the National Grid, but it believes that it could procure 3GW or more than would otherwise have been the case.

Decc also plans to introduce penalties for operators that renege on contracts, including banning them from participating in future auctions, raising monitoring and reporting requirements, and increasing credit cover for projects that stall. The department will consult later this year on binding emission limit values on air pollutants from diesel engines for generators between 1MW and 50MW.

Manufacturing trade body EEF described the proposals as 'decisive and coherent', while the Renewable Energy Association and Greenpeace slammed them for failing to promote the low carbon agenda.

Energy lobby comes out in favour of renewables

A u-turn by the UK's biggest energy lobby group could have far-reaching significance for energy policy, according to experts.

Energy UK has typically been seen as the voice of the 'big six' energy suppliers. But, in what one expert described as a 'flip to the other side', it has called for a stronger focus on energy efficiency and a greater roll-out of renewables. The change in heart, signalled in a report that sets out its vision for the energy sector, has coincided with a change in complexion of the body, with new suppliers and generators now making up nearly half its membership.

Catherine Mitchell, professor of energy policy at the University of Exeter, said: 'This report reads almost as if Energy UK has flipped to the other side. I take this to mean that its members realise that their future is in new energy systems rather than the old.'

Dale Vince, founder of renewable energy firm Ecotricity, said: 'This is a major shift in position and may represent the falling of one of the last barriers to real progress on the green energy front.' The announcement underscores the point that fossil fuels are yesterday's energy source, Vince added.

Nick Mabey, chief executive at energy consultancy E3G, said: 'There are a lot



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more players [in the energy market] now. We are seeing a fundamental shift from the old energy business model because it's not fit for the future.'

Lawrence Slade, who became Energy UK chief executive last year, said government cuts to renewable energy subsidies had undermined investor confidence.

His comments came as the appeal of the UK to renewable energy investors fell. EY's latest renewable attractiveness index ranked the UK alongside Saudi Arabia and Poland, and the consultancy warned that a weak 2015 made 2016 a make-or-break year.

Meanwhile, Decc has said it will review tidal lagoon energy to determine whether the technology offers good value.

Firms complete test of protocol

The Natural Capital Protocol will be officially launched on 13 July after businesses completed testing a draft of the global framework for measuring and valuing their direct and indirect impacts and dependencies on nature.

The protocol, which is being developed by the Natural Capital Coalition, has been piloted by more than 50 companies, including ten firms described as 'deep-divers', which elected to apply it in full. They were: The Coca-Cola Company, F. Hoffmann-La Roche, Kering, Natura, The Dow Chemical Company, Hugo Boss, Nestlé, Olam International, Nespresso and Shell. More than 40 other companies have applied stages of the framework to their operations to test and validate the approach, while a further 500 organisations have provided feedback.

On the extent of business interest, Mark Gough, executive director at the

coalition, said: 'The levels of support and constructive ideas we have received is astounding, and the community is proving that collaboration on this scale can deliver robust and practical results.'

Dr Gemma Cranston, senior programme manager at the Cambridge Institute for Sustainability Leadership, which led the testing phase, said feedback from the pilots was being collated. 'Testing the protocol with companies is essential to ensure the final product is relevant, accessible and valuable to businesses. The input and contributions from all the pilot testers are a fundamental part of the process.'

Gough said the coalition had already received significant interest from organisations wanting to use it to help them include nature in their future decision-making.

Sector guides will also be published in July, he confirmed.

Short cuts

University savings

The first phase of higher education's revolving green fund has saved universities in England more than £210m in energy costs since it was established in 2008, Salix Finance and the Higher Education Funding Council for England (HEFCE) have reported. Each organisation invested £10m in the fund, with 57 universities contributing an additional £5m. Each educational institution holds a ring fenced fund to invest in energy efficiency projects. Since 2008, universities have implemented more than 2,600 projects and the original £25m investment pot has enabled about £51m worth of energy saving projects to go ahead, Salix and HEFCE said. They estimate that annual carbon savings from the projects total 82,000 tonnes and that more than 1 million tonnes will be saved over their lifetimes. Keele University has recycled its original £250,000 revolving green fund almost four times, and savings on energy bills from the projects implemented exceed £540,000 a year.

Sea structures studied

Four UK scientific bodies have won a share of £1.8m to research the influence of man-made structures such as oil and gas platforms, wind farms and shipwrecks on the marine environment. The funding will come from the pan-European INfluence of man-made Structures In the Ecosystem (INSITE) programme, an oil and gas industry-sponsored initiative. The Centre for Environment, Fisheries and Aquaculture Science, the Heriot-Watt University Centre for Marine Biodiversity and Biotechnology, the Sea Mammal Research Unit (SMRU), and the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) will research the effects of man-made structures over time. They will also study the extent to which the structures form an inter-connected system of hard substrate and the impact that has. The research will be concluded by the end of 2017 with the outcomes published in peer-reviewed journals.

Business plans

Iberdrola, which owns **ScottishPower**, is to invest €24bn over the next four years, one-third of which will be spent on renewables. Around 35% will be invested in the UK, mainly in transmission and distribution infrastructure, and in increasing its renewable capacity – with the commissioning of 1,070MW of offshore and 450MW of onshore wind power. Iberdrola has pledged to reduce group emissions, which now stand 30% below the European industry average, by a further 50% by 2030, with the company becoming carbon-neutral by 2050.

Apple has issued bonds worth \$1.5bn to fund clean energy projects across its operations. It is the largest 'green' bond to be issued by a US corporation and the money will be used to finance renewable energy, energy storage and energy efficiency projects, green buildings and resource conservation efforts. Lisa Jackson, vice-president of environment, policy and social initiatives, told *Reuters*: 'This will allow investors to show they will put their money where their hearts and concerns are.'

Yorkshire Water is to invest £318m over the next 12 months to tackle the challenges posed by climate change, a growing population, and ageing infrastructure. The money will be spent on improving water and sewerage services, including drinking water quality and wastewater treatment, as well as measures to conserve moorland, protect the environment from flooding and improve rivers.

Twenty companies in Italy's oldest textile district and Europe's largest, Prato have pledged to adopt the hazardous chemical elimination standard, Detox. The companies supply fashion brands, including **Gucci**, **Prada** and **Armani**, and Confindustria Toscana Nord will oversee the regional adoption of the standard.

Energy and climate change secretary Amber Rudd has given **Palm Paper** the go-ahead to build a 162MW combined cycle gas turbine power plant at its paper mill in King's Lynn. The company, a subsidiary of Germany based Papierfabrik Palm, said the plant would replace two package boilers and reduce the mill's overall CO₂ emissions per unit of electricity or steam generated (carbon intensity).

Five-year plans published

A lack of reference to waste and recycling in Defra's five-year plan will damage the sector's ambitions to achieve higher recycling targets and generate new jobs, industry experts have warned.

The environment department's plan contains only one reference to waste, in a pledge to develop new approaches to tackle waste crime and litter. The word 'recycling' does not appear at all. Jacob Hayler, executive director of trade body the Environmental Services Association (ESA), said: 'The departmental plan certainly sends out a negative message about the next five years for our sector,' he said.

He also criticised the continued absence of a waste strategy for England, which he warned was harming investment and the country's ability to increase recycling rates. Northern Ireland, Scotland and Wales all have a waste strategy.

One of Defra's priorities for 2016 is to develop its 25-year plan for the environment. The department will publish the scope of this plan in the spring, and aims to complete it by the end of the year. It will contain a series of indicators to record progress, some of which Defra is already measuring, including air quality, enhancement of freshwater and the status of protected areas. Another focus is to



Defra's Liz Truss (left) and Decc's Amber Rudd

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reduce regulatory burdens to business. Defra said it would publish a progress report in the summer and will measure progress by using net annual savings to business, as well as the number of regulations improved or abolished.

Decc has also published its plan to 2020. Its priorities include: energy security and resilience; decarbonisation; and the UK's energy legacy. However, the chancellor has cut its budget by 22% over the next few years. To achieve this, the document outlines cost saving measures, including sharing services with other departments and reducing the amount spent on corporate functions. It also expects to make changes to how the Nuclear Decommissioning Authority operates, including delaying 'non-safety critical projects'.

Flaws in REACH evaluation

The substance evaluation process under the EU REACH regulation needs to be improved, according to an independent assessment report commissioned by the European Chemicals Agency.

The study examined the effectiveness, efficiency, transparency and workability of substance evaluation (SEv). It revealed notable differences between how REACH-competent authorities in member states (MSCAs) handle the process and also differences in the way registrants (and groups of registrants) act in response to requests for information about their substances. 'Although there are clear rules for the way that MSCAs act and how registrants respond in SEv, it is clear that different authorities have their own styles,' it said.

In addition, SEv is regarded as less than transparent by some MSCAs and industry, while the process was perceived to be more lengthy than needed. The research

found that, if a consortium of firms acts for a substance, the process tends to be relatively straightforward. Otherwise it can be complicated and possibly contradictory because registrants might disagree on responses and communication might be uncoordinated.

Recommendations in the study include: tackling the short deadlines that registrants and authorities struggle to comply with; improving communication to registrants of the schedule for decisions; accelerating the referral process to prevent a backlog of cases; and improving the links between substance evaluation and compliance checking.

The study was carried out by consultancy Amec Foster Wheeler Environment and the government body Infrastructure UK, with support from BRE and toxicology experts Peter Fisk Associates. The findings will feed into the agency's report on REACH implementation, due later this year.

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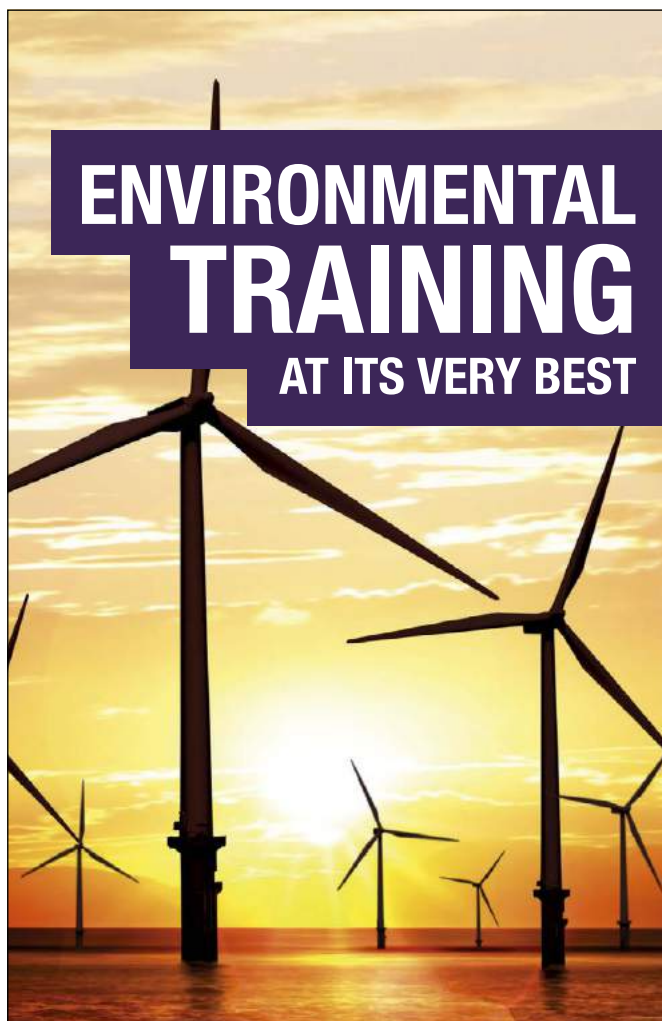
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14004 published to aid implementation of 14001

The revised version of ISO 14004 was published on 1 March after the final draft received unanimous backing.

14004: 2016 aims to provide guidance on establishing, implementing, maintaining and improving a robust, credible and reliable environmental management system (EMS), said the international standards body. 'It is intended to help organisations to manage their environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability.'

Per Arne Syrrist, convener of the group that revised 14004, described the new version as a big step forward: 'The 2016 version of the standard will be a useful guidance document for both newcomers and organisations with EMS experience who want to develop their system to cope with future environmental challenges.'

14004: 2016 reflects the changes in 14001: 2015, the revised international EMS standard published last September. These changes include taking a life-

cycle perspective, demonstrating knowledge and understanding of compliance status, and linking to the organisation's overall strategy. Martin Baxter, chief policy advisor at IEMA, said the revised 14004 provided much-needed guidance to support organisations incorporating these into its EMS.

Greg Roberts, manager at Ramboll Environ and a member of the ISO revision group, said 14004 would provide guidance not only to those implementing the changes to 14001 but also the auditors who certify an EMS. 'It's also useful to those organisations wanting to implement an EMS regardless of whether they are looking for it to be certified,' he said.

14004 has a new title, *Environmental Management Systems – general guidelines on*



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implementation, which, Roberts said, better reflected its content: 'The title has changed to reflect what's in the "tin" – a practical guide to help an organisation implement an EMS. The old title made it sound more of an academic text, which this version is not.'

Meanwhile, 26 experts met in Gothenburg at the beginning of February for the first gathering of the group developing ISO 14008 covering monetary valuation of environmental impacts and natural resource use. The first working draft is due this month.

From environmentalistonline.com...

ISO 14001 poll

One in three environment professionals surveyed by consultancy WSP|Parsons Brinckerhoff said leaders in their organisation had 'little involvement' in environmental management. A further 30% said there was 'moderate involvement', and the remainder described their senior managers as 'involved' or 'very involved'. Proof of senior involvement is vital for companies wanting to become certified to international standard for environmental management systems, ISO 14001: 2015. David Symons, director at the consultancy, said: 'Environmental issues are still seen by many firms as a middle management, operational issue. Just focusing on the day-to-day issues misses these wider, strategic opportunities and sells short the potential for companies to be a real force for good.' Just 25% of respondents said they had 'complete confidence' in the data their environmental systems were giving them. bit.ly/1TFoSuL

Assurance use

Businesses are not benefiting as much as they could from external validation of corporate sustainability reports, according to the World Business Council for Sustainable Development. Third-party checks of corporate sustainability reports are increasingly important in providing assurance of the financial, social and environmental disclosures made, the business council said. Independent verification statements also help companies enhance their credibility and reassure readers that disclosures are reliable, it added. The council has launched guidance to help businesses get the most from external verification. It outlines advice from assurance providers and standards bodies, including the Global Reporting Initiative, the International Integrated Reporting Council and the Sustainability Accounting Standards Board. Around 91% of reports published in 2015 by corporate members of the council used assurance, compared with 81% in 2014. bit.ly/1PKE2L5

Green build lag

Commercial 'green' building is surging worldwide, but not in the UK, which ranks almost bottom in this sector, according to research by the World Green Building Council. More than 1,000 building professionals, including architects, contractors, owners and engineers, in 69 countries were asked about their expectations for building projects that will gain certification under schemes such as BREEAM, LEED and Green Star. The building trade was particularly optimistic in Mexico and India, where more than 60% of respondents said they expected to carry out green commercial projects in the next three years, compared with a global average of 46%. However, only 33% of UK respondents expected to be involved in new green commercial construction. The UK building sector was more positive on prospects for green public sector building such as schools and hospitals, with 37% foreseeing work in the next three years, compared with a global average of 38%. bit.ly/1Vn4bAW

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IEMA to disseminate the environmental legacy of the Crossrail project

Last month, IEMA attended an industry event to mark the launch of Crossrail's learning legacy. The project has already generated a significant level of learning across 12 themes (see top right). IEMA is the delivery partner for the environment theme, so members can look forward to receiving a wealth of updates, webinars and resources on the innovations achieved and lessons learned during the planning and construction phases.

Crossrail, which links Reading to the west of London with Abbey Wood and Shenfield to the east, is Europe's largest construction project. It is now almost 75% complete, and on schedule for opening in December 2018.

Josh Fothergill, policy and practice lead at IEMA, explained the institute's backing for the legacy initiative: 'Crossrail's environment and sustainability innovations offer our profession huge learning opportunities. At IEMA, we feel the legacy goes far beyond learning. This is about inspiration, direction and the power of what is possible.'



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The learning legacy was launched at an event on 26 February, attended by Andrew Wolstenholme, chief executive at Crossrail; Tony Meggs, chief executive at the Infrastructure and Projects Authority; and Alison Munro, managing director of development at HS2.

The legacy aims to share insights from the project with the wider UK infrastructure industry. With more than £400bn of infrastructure projects identified in the government's National Infrastructure Plan, Crossrail's learning legacy initiative seeks to collate knowledge and share good practice. 'Passing on the lessons and good practice

Crossrail's learning legacy themes

- Environment
- Project and programme management
- Procurement
- Authorisation and consents
- Land and property
- Health and safety
- Engineering
- Operations
- Talent and resources
- External affairs
- Innovation
- Information management and technology

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that we have learned at Crossrail is an absolutely essential part of raising the bar in the delivery of major projects,' said Wolstenholme. 'With an unprecedented number of infrastructure schemes around the corner, now is the time to start sharing what we have learned so the UK can build on its reputation for delivering safely, on time and on budget.'

The first batch of published material shares some of the early lessons that have been learned. It includes technical papers, peer-reviewed case studies and procedures. These have been published on a dedicated website learninglegacy.crossrail.co.uk. Further material will be published every six months until the project is complete. Members will receive invitations to legacy webinars and other opportunities later in 2016 when the main collection of environmental learning documents are published.

In February, London mayor Boris Johnson (pictured) announced that Crossrail would be called the Elizabeth line when services start in 2018.

New IEMA corporate members announced

Green Energy Consulting

Hambleside Danelaw Building Products

PETROSTUFF NIGERIA LIMITED

RJS waste management uk

Three UK-based organisations and one from Nigeria have joined IEMA's list of corporate membership partners.

The four have signed up to partner with IEMA to deliver the right skills and environmental performance into their business through the institute's tailored corporate membership packages – IEMA for Business, IEMA for Consultancy and IEMA for Education. The companies are:

- **GEC Solutions** – energy consultancy based in Gateshead, Tyne and Wear.
- **HambleSide Danelaw** – roofing and ventilation specialist based in Daventry, Northamptonshire.
- **Petrostuff Nigeria** – service provider to the oil, gas, petrochemicals and energy industries operating in Lagos.
- **RJS Waste Management** – London-based a waste disposal company.

IEMA would like to welcome these organisations to its list of partners, and looks forward to working with them to drive their performance and profile.

A list of corporate partners is available at bit.ly/1pmyhdO. Go to bit.ly/1TOF8xW to find out what IEMA's corporate membership packages can do for your business.



10% of members sign Live Earth petition

As part of the #IEMANoCOPOut campaign, which ran in the lead-up to COP21 in December, IEMA urged members to add their names to a global petition for action on climate change.

Since the start of the campaign, last September, 1,581 IEMA members have now pledged their support for Live Earth's billion voices initiative, which is more than 10% of the membership.

Find the link to sign up at iema.net and add your name to the list.

Next ESOS assessor workshop confirmed

9/6



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As one of only 11 organisations approved to operate a lead energy assessor register for the energy savings opportunity scheme (ESOS), IEMA is committed to holding regular training days.

The next workshop will be held in Lincoln on 9 June. Full members of IEMA who hold environmental auditor status as

well as principal environmental auditors who work in this area are eligible to attend the workshop with a view to joining the register.

Full eligibility details and an application pack are available at bit.ly/1RsfO8W.

Paris climate agreement and UK policy

The Paris COP21 climate agreement set in place a framework for limiting global warming to well below 2°C and to restrict net global greenhouse-gas (GHG) emissions by the end of this century. The agreement also set an ambition to limit average global warming to 1.5°C.

In the UK, the Climate Change Act 2008 sets an 80% GHG emissions reduction to 2050 compared with 1990, with a rolling programme of carbon-budgets each spanning five years. We're now in the second carbon budget period (2013-17). This requires a 29% minimum reduction, which the UK is on track to surpass. The government is required to set the fifth budget for the period 2028-32 by June this year.

Crucially, the 2050 80% emissions reduction target set in the 2008 Act assumed that international agreements would be put in place to restrict the

global average temperature increase to 2°C, rather than the more ambitious goal set out in the Paris agreement.

The independent Committee on Climate Change (CCC) has reviewed whether its recommended fifth budget of 1,765 MtCO₂e, equating to a 57% emissions reduction compared with 1990, should be strengthened.

In concluding that there should be no change now (*the environmentalist*, February 2016, p6), the committee notes that the pledges made in Paris – including the package from the EU – do not amount to a pathway to 2°C warming or below. It said the review and ratcheting up of each country's intended nationally determined contributions would need to be accelerated to achieve the overall goal.

The CCC highlights the importance of carbon capture and storage (CCS) in meeting the 2050 target, and the need

to make sufficient progress in the run-up to 2030. The recent cancellation of the £1bn funding for commercialisation of CCS is clearly a concern.

However, the commitment in the energy and climate change department's plan for 2015-20 (p5) to 'consider the advice from Lord Oxburgh's CCS advisory group as we explore our future approach to this technology for both power and industrial processes' offers some hope.

So what next? The bottom line for the UK is that, to achieve both its national and international climate change obligations, the CCC's recommendation on the fifth carbon budget ought to be adopted without delay.



Martin Baxter is senior policy advisor at IEMA; @martinbaxter on Twitter



IEMA chairs discussion on energy solutions for construction

Energy storage, the politics of specification, off-site construction and bridging the skills gap were just some of the topics covered during an IEMA-chaired debate on energy challenges in the construction industry.

The discussion, on 10 February at the BRE head office in Watford, was organised by Energy 2016 as part of UK Construction Week (UKCW). Chaired by IEMA's policy lead, Nick Blyth, the event brought together energy experts (see panel, right) to discuss the key issues facing the sector.

The debate started with a discussion about energy storage, which is seen as the crucial facilitator for the future of renewable energy in domestic and commercial buildings. Participants were unanimous in calling on the industry to take into account flexibility and sustainability when constructing buildings to ensure they are future-proof.

A critical need to encourage, excite and educate those entering the construction industry from education was another key topic. The panel said events like UKCW inspire students and those seeking apprenticeships to look at a career in construction.

The politics of construction was also discussed, with the correct specification of building materials being highlighted as a topical issue. Natalie Bennett, leader of the Green party, said: 'We must not lose track of the development of eco-homes and ensuring our properties meet basic energy efficiency requirements. Recent thermal imaging results of existing housing stock showed that many of our homes are no more thermally efficient than in Victorian times – and this is simply not good enough.'

The panel said consumer confidence in new policies was crucial to development, but was reliant on the right market mechanisms being in place to support a long-term transition.

'Despite the construction sector being used to working within what regulations demand, it is a resourceful industry,' said Blyth. 'However, as we've deliberated, talking to a consumer audience is as vital as a trade audience, and it is events like UKCW that can help change the public perception of renewable technology and champion construction.'

Visit ukconstructionweek.com/ for further details of the discussion.

The energy advisory panel

- **Nick Blyth** (chair) – policy lead at IEMA
- **Natalie Bennett** – leader of the Green party
- **Andrew Mellor** – partner at PRP Architects
- **John O'Brien** – associate director, construction innovation, at BRE
- **Doreen Wright** – associate director of performance and quality at A2 Dominion
- **Chris Miles** – director, distributed energy, at Renewable Energy Systems
- **Steve Fitzsimons** – senior manager infrastructure services at EDF Energy
- **Claire Hebbes** – head of infrastructure (development) at Lendlease
- **Lauren Cook** – policy analyst at the Renewable Energy Association
- **Mark Donovan** – principal engineer at UK Power Networks Services

EIA research

ARVI tool for EIA

The three-year project, called IMPERIA, to improve environmental assessment by adopting good practice and tools of multi-criteria decision analysis (MCDA) ended in December. A key objective of the project, which was partly funded by the EU Life+ programme, was to develop new MCDA-based tools for integrated EIA and a questionnaire tool to gather public opinions online in a structured and efficient way. IMPERIA developed an Excel-based ARVI tool to aid this.

Managed by the Finnish Environment Institute (SYKE), IMPERIA developed good practice and methods for MCDA with project partners. These were tested on eight different schemes, including assessments of the increased use of biofuels by Helsingin Energia in 2014 and of the 'Balticconnector' natural gas pipeline between Finland and Estonia in 2015. The ARVI method enabled experts to collect and compare different datasets and to produce charts and tables to illustrate the results. It found that taking local considerations into account early in the planning process bolstered lower impact development.

imperia.jyu.fi/english

Views on EIA scoping

A study in *Environmental Impact Assessment Review* examines practitioner notions of effectiveness in EIA scoping in England. The authors tested the 'received view' of scoping, which asserts that effectiveness is constrained by a failure to narrow the assessment focus, against an alternative, pragmatist interpretation. They found that risk management 'ends-in-view' shape the interpretation of the purpose of scoping and hence effective practice. Among EIA consultants, this focus translates into managing the risk of project delays, while planning officers seek to minimise the risk of legal challenge, and statutory consultees aim to provide advice that is proportionate to potential environmental risks. The research also revealed that scoping approaches limit opportunities for learning.

bit.ly/1oq5tRu

Screening opinion for waste at Magnox site

Plans by Magnox to import packaged intermediate level nuclear waste for storage at its power station at Bradwell have moved forward after Essex County Council rejected the need for an environmental impact assessment (EIA).

The nuclear power operator wants to import the material, which would include fuel element debris and radioactive sludge, from its Sizewell and Dungeness power stations and store it at the existing intermediate level waste (ILW) facility at Bradwell. It would remain there until the opening of a geological disposal facility by the Nuclear Decommissioning Authority, though this is unlikely to be before 2040.

The company wants to remove the planning restriction imposed by the council in 2004, which approved the Bradwell ILW store on condition that it would be



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used exclusively for the storage of the site's waste. In a letter to property consultants Bilfinger GVA outlining its screening opinion, the council's planning department stated: 'Based on the consideration of both the criteria within schedule 3 of the [EIA] regulations and national planning practice guidance, it is considered that EIA would not be required.'

Magnox, which operates 12 UK sites, has yet to lodge a formal planning application.

EIA practice update with IEMA's Josh Fothergill

Scoping training for Wales –

Consultancy Arcadis has developed, with IEMA's help, a training course on scoping for those involved in EIA in Wales. It is being used in a series of Welsh government-funded workshops for local planning authorities and representatives of statutory consultees and government bodies. The course takes delegates through the basics of the regulatory process, good practice approaches and actions to support the delivery of more proportionate EIA via scoping.

Proportionate EIA summit – The transposition by spring 2017 of the amended EIA directive into UK regulations will increase attention on impact assessment. This provides an opportunity for UK EIA practice to address its most significant problem – disproportionate assessment and documentation. In late April, IEMA is staging the UK's first Proportionate EIA summit. The 75 invited delegates – including from planning authorities, developers, NGOs and government bodies, as well as practitioners and lawyers – will discuss how to improve the focus of EIA and its value to

environmental protection, community cohesion and the delivery of critical development.

The summit will be hosted by Arup at the consultancy's central London office.

Health and EIA briefing note – IEMA is working with consultancy Ben Cave Associates to produce a briefing note for Public Health England (PHE) on the role of health in EIA. It will be published later in the year and a seminar is being held in Leeds on 15 March to get input from HIA, EIA and health professionals.

IA competency MFIs – IEMA is staging an international event with the European Bank of Reconstruction and Development (EBRD) on developing a global environmental and social competency framework across the multilateral financial institutions (MFIs). The half-day event, at EBRD's head office in London, will include delegates from the World Bank, European Investment Bank and UK Export Finance, as well as about 50 invited guests from the MFI community and the IEMA membership.



Brexit poll badly timed for circular economy

The UK could miss out in key negotiations on the circular economy package because of uncertainty caused by the EU referendum, industry experts have warned.

The package was published by the European commission in December. It aims to make the economy more resource-efficient by promoting the repairability, durability and recyclability of products, and introducing common EU targets for recycling. Full details of the package will be fleshed out over the next two years. However, the coming months are crucial because the European parliament is due to finalise its position on the legislative elements of the package by the end of June, according to Nick Molho, executive director at the Aldersgate Group.

The commission will also be setting up working plans on the development of the detail of the package over the next couple of months, Molho said. 'There is a danger that the UK government decides not to get too involved in the development of EU legislation pending the referendum and end up in a situation in four months' time that we're still in Europe but we've missed out on the opportunity to input into the package.'

According to Molho, the commission is aware that British businesses have been leading the way on circular economy business models and is keen to involve

them, but so far the UK government has engaged little. 'Despite the referendum, the UK government should really get involved and constructively support this package,' he said.

Roy Hathaway, European policy adviser at the Environmental Services Association, said the referendum could weaken the UK's position in the circular economy negotiations: 'If I put myself in the shoes of the commission's environment department, I don't know whether I should take seriously any points made by UK officials and ministers.'

Pieter de Pous, EU policy director at the European Environment Bureau, said the UK referendum would be blamed for delays in passing European legislation even if responsibility lay elsewhere. The commission had planned to publish details of the products to be covered by new rules on ecodesign by the end of last year but had yet to do so, he said. 'Some



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people are saying this is because of the UK referendum but it could be that there are pressures from other sides to not do it. The referendum is not helpful, but that's not the only reason things are being delayed. It's being used as an excuse.'

The referendum could also hold up the transposition of the new environmental impact assessment directive. A consultation had been due in June or July in order to complete transposition by the May 2017 deadline, but 'purdah rules' prevent publication until the referendum is over.

Connecting the UK and Europe – notes from a small energy island

One thing parliament should be debating but isn't much is what the UK should do about energy interconnectors – a cable or gas pipe under the sea connecting it to grids in other European countries.

There are more gas than electricity interconnectors. It is one reason why, if shale gas ever produces in any quantity, it won't make any difference to the overall price to UK consumers. Gas is traded across a relatively homogenous European market, and any shale gas produced would simply go into that market, largely through interconnectors, if not used in the UK itself. Not so for electricity where there is a dearth of serious interconnector capacity. The UK lags behind most of Europe here: currently about 5% of electricity demand can be sourced from interconnectors. The EU wants 10% of member states'

electricity demand to be met this way by 2020, rising to 15% by 2030. Some states, including Germany, with about 17% of demand interconnected, have already achieved the 2030 target.

But the UK is stirring, with nine projects at various stages of development. More lines to France and Ireland, one to Belgium, and lines to Norway and Iceland have all got beyond the drawing board. However, only three have a realistic chance of being in place by 2020.

But perhaps that isn't the real point. It is undoubtedly the case that, with much of its ageing fleet of power stations due to close over the next few years, the UK needs far more electricity interconnectors than it has. There is also the consideration of what part an interconnector array might play in the UK's future low-carbon electricity scenarios: at present, interconnected

electricity does not 'count' for renewable or other targets, partly because it comes from such a mixed bag of sources. But we can be fairly sure that power coming from Norway would be largely low carbon, since it would be mainly from hydro power, and certainly almost all of that from Iceland would be geothermal.

Interconnectors might also play a part in the EU referendum debate. A recent research note from the House of Commons Library on the possible effect of Brexit on a range of areas highlighted interconnection as one area where leaving might result in 'poorer security of supply through decreased interconnectivity to Europe'.



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



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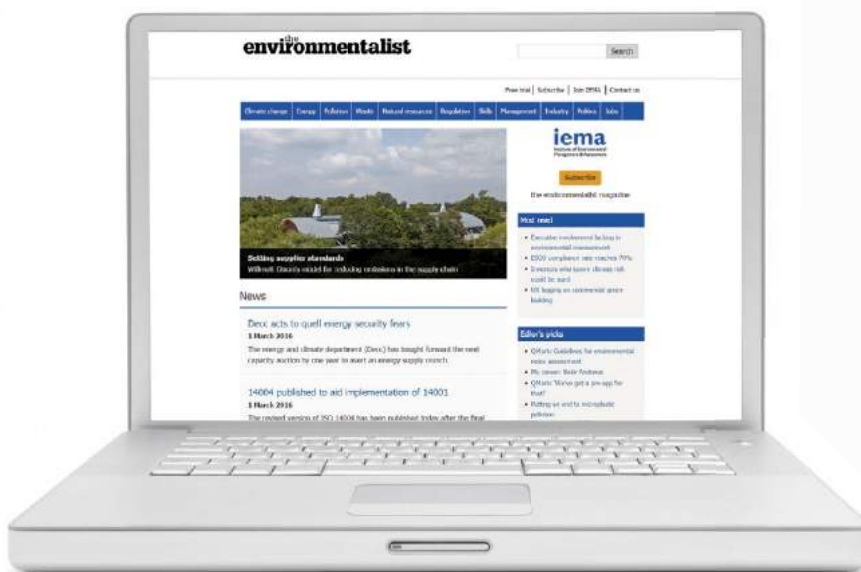
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In court



Firm given Scotland's highest confiscation order

A confiscation order of £345,558 has been handed to waste firm Oran Environmental Services (OES). It is the highest confiscation order in Scotland for environmental offences under the Proceeds of Crime Act. The firm was also fined £12,000.

OES pleaded guilty to three offences under the Environmental Protection Act 1990 at its Kilbagie Mill site in Alloa between December 2012 and August 2013. They relate to the company's failure to remove waste materials from the site after enforcement action by the Scottish Environmental Protection Agency (Sepa); its storage of controlled waste on land not covered by a waste management licence; and its failure to carry out adequate pest control measures at the facility.

Sepa said it received numerous complaints about the site from local residents during 2013, including about an increased presence of vermin, flies and birds. The regulator made 43 visits to Kilbagie Mill, discovering during its investigation that that OES was using a non-licensed area, with waste stored in large unsegregated stockpiles, skips and bins. Sepa issued seven enforcement notices between April 2012 and July 2013, partially suspending the site's licence on two occasions.

Sepa also raised concerns about leachate, a harmful effluent, which was running onto non-impermeable surfaces on the ground.

The Crown Office said the confiscation order represented the full benefit the company made from failing to comply with the legislation and fees they avoided with their failings. Lindsey Miller, procurator fiscal for organised crime and counter-terrorism, said: 'This company was operating on a site that they had refused to make fit for purpose at the expense of the local environment and at a significant financial benefit to them. By failing to remove the waste they had sought to pocket over £300,000.'

Calum MacDonald, executive director at Sepa, said: 'The confiscation order reflects the costs avoided by the company in undertaking these illegal activities and is the result of close collaborative working between Sepa and the Crown Office.' He said the scale of the order sends a 'clear and unequivocal message' that environmental crime will not be tolerated and that Sepa would pursue those who seek to profit.

Oil and gas company fined £3m

Lincoln Crown Court has fined ConocoPhillips (UK) £3m and ordered it to pay costs of £159,459 for two uncontrolled and one controlled but unexpected gas release on the Lincolnshire Offshore Gas Gathering System (LOGGS) in 2012.

The LOGGS complex is situated 70 miles off the Lincolnshire coast and is made up of five interlinked platforms. An investigation by the Health and Safety Executive (HSE) found that maintenance work to replace a gas pressure control valve on one of three gas turbines used to generate electricity for the installation triggered two releases on 30 November. The third release occurred the next day. Overall, around 603kg of produced hydrocarbon gas was released.

The HSE served the company with a prohibition notice on 13 December 2012 for failing to control the gas releases. The firm said it had modified its LOGGS incident command system to prevent a repeat of these incidents.

ConocoPhillips (UK), part of the US oil and gas multinational, pleaded guilty to three breaches of the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995.

Ferry firm pleads guilty to pollution

Newry Magistrates' Court has given Seatruck Ferries a two-year conditional discharge for polluting the shoreline between Warrenpoint Harbour and Narrow Water Castle in County Down.

After reports of a spill of heavy fuel oil into Warrenpoint Harbour on 22 October 2014 from the vessel, Seatruck Panorama, inspectors from the Northern Ireland Environment Agency found contamination along a 3km stretch of Carlingford Lough. The freight ferry company, which operates services between Heysham in Lancashire and Warrenpoint, pleaded guilty to the offence of making a polluting discharge to a waterway under the Water (Northern Ireland) Order 1999.

Case law

Development on the green belt and incorrect advice

In *Smech Properties v Runnymede Borough Council* [2016], the Court of Appeal dismissed an appeal against the council's decision to allow development in the green belt, even though the local authority had followed incorrect advice.

Runnymede Borough Council granted planning permission for a mixed-use development on a site in a green belt, on the basis of an officer's report. Smech Properties, which owned land close to the site, sought a judicial review on the ground that the council had followed incorrect advice in the officer's report regarding the impact of planning permission on its ability to meet requirements for additional housing provision in its area. The High Court dismissed the claim to quash the permission, holding that had the correct advice been given, the council would inevitably still have decided to grant permission.

Smech appealed and the case proceeded by way of a review of the High Court's judgment. The Court of Appeal said the High Court judge, who was a member of the Planning Court, had enough expertise and could be expected to have a particularly good understanding of the planning context in the case. It also said the judge had been entitled to make the assessment he had; and that it had been inevitable that, if the planning committee had been properly advised about the position in relation to housing need in the Runnymede area, it would have made the same decision. In any event, it ruled that the judge's assessment had been correct. The outcome suggests that, in the absence of clear legal flaws, the courts are reluctant to interfere with the judgment of another planning court.

Jen Hawkins

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New regulations



In force	Subject	Details
25 Jan 2016 	Noise	EU Regulation 2016/5 amends 748/2012 to include new noise standards introduced by amendments in 2014 to the Convention on International Civil Aviation (also known as the Chicago Convention). Noise standards have been amended for: subsonic jet aeroplanes; helicopters; propeller-driven aeroplanes; supersonic aeroplanes; and tiltrotor aircraft. bit.ly/20yT2P2
1 Mar 2016  	Planning	The Onshore Wind Generating Stations (Exemption) (England and Wales) Order 2016 makes provision under the Electricity Act 1989 to remove the requirement for onshore wind generating stations to apply to the secretary of state for planning consent. Onshore wind generating stations over 50MW will in future apply to the local planning authorities under the Town and Country Planning Act 1990. bit.ly/20gu88w
3 Mar 2016 	Environment protection	The Nature Conservation (Scotland) Act 2004 (Authorised Operations) Order 2016 lists authorised operations that do not require separate Scottish National Heritage (SNH) consent. The order revokes the 2011 Order. bit.ly/1R4n9uW
13 Mar 2016 	Built environment	The Building (Energy Performance of Buildings) (Scotland) Amendment Regulations 2016 insert new requirements into the 2004 Regulations, including: that all new buildings must be 'nearly zero energy buildings'; and that inspection of air conditioning systems must include inspection of 'all accessible part'. Under the 2016 Regulations, the maximum period between inspections should not exceed five years. bit.ly/1PWSfWB
15 Mar 2016 	Emissions	The Emissions Performance Standard Monitoring and Enforcement Regulations (Northern Ireland) 2016 set out the compliance requirements placed on operators of fossil fuel plants. This includes submitting an emissions limit notification to the chief inspector, stating the emissions limit for the plant, its installed generating capacity and the date it started or is expected to start operating. The chief inspector may issue a enforcement notice, civil penalties and information notices if an operator breaches the emissions limit duty. bit.ly/1TiS9JZ
30 Mar 2016 	Waste	The Waste Management Licensing (Scotland) Amendment Regulations 2016 amend the 2011 Regulations. Recovery of waste tyres and the storing of tyres in a secure place have been removed from the list of activities that are exempt from the requirement to have a waste management licence. bit.ly/1ObGxSr
1 Apr 2016 	Environment protection	The Water Environment (Remedial Measures) (Scotland) Regulations 2016 provide the Scottish Environment Agency (Sepa) with the power to serve a remedial measures notice. Under the legislation, before serving the notice Sepa must consult the 'appropriate person' and anyone who is likely to be substantially affected. bit.ly/1PGN5JW
1 Apr 2016 	Environment protection	The Reservoirs (Enforcement etc.) (Scotland) Order 2016 provide additional powers to the Scottish Environment Protection Agency (Sepa) to enforce the requirements of the Reservoirs (Scotland) Act 2011. From 1 April, reservoirs in Scotland with a capacity of at least 25,000m ³ will be regulated by Sepa, which will be able to issue stop, restoration and restraint notices for breaches of reservoir management duties. It can also cover its costs from a reservoir manager. bit.ly/1ojfKiw
1 Apr 2016 	Water	The Water Act 2014 (Commencement No.2) (Scotland) Order 2016 brings into force section 7(1) and (2) of the Water Act 2014. These refer to arrangements with the Water Services Regulation Authority on procedures for granting licences. bit.ly/1LpCMsC

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

Latest consultations



14 Mar 2016

Water quality



Defra is seeking views on draft Water Supply (Water Quality)

Regulations 2016 and draft Private Water Supplies (England) Regulations 2016. The new regulations transpose the monitoring requirements for radioactive substances in the EU directive 2013/51/Euratom. They also clarify and consolidate the drinking water legislation in line with the government's commitment to better regulation. The new regulations will revoke and replace the Water Supply (Water Quality) Regulations 2000 (as amended) and the Private Water Supplies Regulations 2009 (as amended). bit.ly/1JUSSI

24 Mar 2016

Regulatory charges



The Northern Ireland

Environment Agency's current regulatory charging policy expires in this month and the environment department is consulting on a replacement setting out charging arrangements for 2016–21. Under the proposals, and in line with the previous charging policies, regulatory fees and charges may be increased by the GDP deflator rate forecast for the financial years 2016/17 to 2020/21 for a number

of schemes. GDP deflator is a measure of price changes in a country over a specific period and is used in economics to account for inflation. bit.ly/1KmWIkV

19 Apr 2016

Conservation and protection areas



Special areas of conservation

(SACs), also known as Natura 2000 sites, are required under EU law for the conservation of biodiversity, while special protection areas (SPAs) are designated to protect populations of rare, threatened or migratory species of wild birds and their habitats. Natural Resources Wales is consulting on plans to create three new SACs for the conservation of harbour porpoise; one new SPA for the conservation of wintering red-throated diver; and two extensions to existing SPAs to protect seabird colonies, to include additional marine areas used by the birds during the breeding season. bit.ly/1SuyFDh

25 Apr 2016

National planning framework



The Welsh government is preparing a National

Development Framework (NDF), a

national land-use development plan, which includes the government's social, economic and environmental spatial planning objectives for the next 20 years. The government is consulting on the NDF statement of public participation, which sets out the key stages and timetable for preparing the framework document and the steps it will take to engage stakeholders and the public. bit.ly/1KmTI86

9 May 2016

Radioactive substances



The

environment regulators – the Environment Agency, Scottish Environment Protection Agency (Sepa) and Natural Resources Wales – are consulting on proposed guidance for the release of nuclear sites from radioactive substances regulation. After the comments are reviewed, a revised document will be available for a trial period so that practitioners, such as nuclear site operators and regulatory officers, can test the new guidance and make further suggestions for improvement. Sepa is managing the consultation. bit.ly/1XuJ8Or

New guidance

Energy efficiency

A guide to energy efficiency standards for industrial plants seeking environmental permits has been published by Defra and the Environment Agency (bit.ly/1VjupV8). Power plants, waste incinerators and other industrial processes need to follow energy efficiency measures to be awarded and comply with environmental permits under schedule 1 of the Environmental Permitting Regulations 2010 (as amended).

CRC conversion factors

Deca has published an updated table of conversion factors for the CRC energy efficiency scheme (bit.ly/1TI3pW6). Organisations covered by the CRC must purchase and surrender allowances for their emissions, with one allowance equal to each tonne of CO₂ emitted. Participants can buy allowances at the start of a compliance year (forecast sale price) or after it ends (compliance sale price). For forecast sale price for 2014/15 and 2015/16 is £15.60; the compliance sale price is £16.40 for 2014/15 and £16.90 for 2015/16.

Producer responsibility

The Environment Agency has issued details on what happens to data submitted under producer responsibility regimes, including a timetable for when data is published. The documents cover data for: waste electrical and electronic equipment (bit.ly/1R5ZTwE); packaging (bit.ly/1R5ZNoP); and waste batteries (bit.ly/247cfvB).

MCERTS

An updated version of the Environment Agency's *MCERTS: performance standards for continuous ambient air quality monitoring systems*, first published in 2012, is available (version 9.1; bit.ly/1Xv3neU). It sets out the performance standards for equipment that monitors pollution in the ambient air and covers: nitrogen oxides, sulphur dioxide, carbon monoxide, ozone, particulate matter and VOCs. Changes include: revised information on the general requirements for complete air quality monitoring systems (CAMs) submitted for testing and CAMS response times; and updates to the table of analyser performance characteristics and assessment criteria.



Laying down the law

A failure to heed conservation bodies can derail major projects

Sheridan Treger and Paul Grace on lessons to be learned from the refusal of an application for a wind farm because of its unacceptable impact on a nearby special protection area



In Alfred Hitchcock's 1963 film *The Birds* a passer-by who has seen an ominous gathering overhead of gulls remarks that it is the end of the world. 'I hardly think a few birds are going to bring about the end of the world,' replies Mrs Bundy. To this her companion Melanie says: 'These weren't a few birds.'

Unfortunately for Mynydd y Gwynt's application (see panel, right) for a development consent order (DCO) for 27 onshore turbines in Powys, Amber Rudd, the secretary of state for energy and climate change agreed more with Melanie than Mrs Bundy. In November, Rudd refused to make the DCO on the basis of unacceptable impacts on red kites in a nearby special protection area (SPA).

Putting question marks over political support for onshore wind farms to one side, if we take the decision at face value then issues around the Conservation of Habitats and Species Regulations 2010 (Habitat Regulations) gave the secretary of state little option but to refuse consent because she did not feel there was a sound legal footing to proceed.

What went wrong?

Nationally significant infrastructure projects (NSIP) are set up to give the promoters of major applications certainty of timescale and process, and to take local politics out of the planning process. What the Mynydd y Gwynt decision proves is that the process is by no means a rubber stamp.

It is hard for anyone with experience of all the work and expertise that go into the DCO consenting process not to feel sympathy for Mynydd y Gwynt. But what exactly went wrong?

Early in the planning process, Natural Resources Wales (NRW) said it was concerned about red kites being harmed in collisions with wind turbines. Mynydd y Gwynt argued that the kites found on the proposed project site were not from the SPA, but NRW said surveys had not gone far enough to account for the birds' winter foraging range. The examining authority agreed with Mynydd y Gwynt and concluded that its assessments were adequate, but Rudd ultimately shared the concerns expressed by NRW. This proved fatal and led to the DCO being refused.

Decision-makers are mindful that the advice of a nature conservation body deserves 'great weight' because of its special expertise, with a 'cogent explanation' required if it is ignored. This has been established by case law on the habitat regulations, and, as a result, the secretary of state can often be hesitant to depart from the advice of NRW or Natural England. Even when the examining authority agrees with an applicant's approach rather than the one advised by the conservation body, as in this case, the secretary of state is often still minded to follow the latter's guidance.

Learning the lessons

So what can promoters and investors in UK infrastructure learn from the refusal of Mynydd y Gwynt's application? Many proposals entering the DCO process benefit from a statutory presumption in their favour if they comply with the government's national policy statements. However, this could be overcome if it led to the UK breaching any of its international obligations. In this instance, the European habitats and wild birds directives were

transposed into UK law through the habitats regulations. These set a low threshold for a full assessment being carried out to ascertain whether a project will adversely affect the integrity of a European site. If it will, the project cannot be authorised unless it is justified by an overriding public interest, which is a test that requires a much higher threshold.

The upshot is that the promoter of a scheme has to provide enough information to enable the secretary of state to determine whether both the requirements of UK law under the regulations and the EU directives are satisfied. It is the role of the nature conservation body to give advice to the secretary on whether the information put forward is adequate to make a decision. The importance the secretary places on that advice leaves environmental specialists having to make every effort to agree the most significant issues on habitats regulations with NRW or Natural England before a DCO application is submitted. If they carry on regardless, right or wrong, they will be taking a great risk.

The fixed timescales of the DCO examination process do not easily allow for any major additional ecological assessment work. Trying to persuade a court to overturn the secretary of state's decision, as Mynydd y Gwynt is currently doing by way of legal challenge, is the last port of call. To date, only one legal challenge against a government DCO decision has succeeded (*Halite Energy Group v Secretary of State for Energy and Climate Change*).

Mynydd y Gwynt project

Mynydd y Gwynt Limited applied in July 2014 for permission to build and operate a 89.1MW wind farm in Powys, on the county's western border. The project would have comprised 27 turbines. Examination of the application started on 20 November 2014 and was completed on 20 May 2015. The examining authority recommended consent. But on 20 November, energy and climate change secretary Amber Rudd rejected this.

Sheridan Treger is a senior associate and **Paul Grace** is associate director in the planning and environment group at Berwin Leighton Paisner.



THE STATE OF THE PROFESSION

PRACTITIONERS' SURVEY 2016

**the
environmentalist**

iema
Institute of Environmental
Management & Assessment



PRACTITIONERS' SURVEY 2016 – THE HIGHLIGHTS

Annual IEMA poll reveals high levels of job satisfaction but a widening gender pay gap

Forty-three per cent of members responding to the 2016 survey of IEMA practitioners are very or highly satisfied in their work, while a further 39% reported being at least moderately satisfied. Just 6% say they derive little satisfaction. These encouragingly high rates lead many practitioners to promote the profession to graduate and career changers.

As *the environmentalist* reported last month, the results also show that respondents with more than five years' experience would recommend the profession to others. More than one-third (35%) said that, if they were advising candidates about what to expect from an environment and sustainability career, they would say it was an area where practitioners can make a difference and have a rewarding career.

On the pay front, two-thirds of respondents have received a pay increase in the past 12 months, and median earnings for IEMA members (£38,180) remain well ahead of those for full-time employees in the UK generally (£27,600) in 2015. The relatively high earnings for

environment and sustainability practitioners reflect a very well qualified profession. Half have an MA or MSc. The IEMA membership is also working increasingly in senior roles, with 59% in a management or leadership position.

On a less positive note, the profession's gender pay gap has reached a five-year high, at 16.7%. The analysis shows that the gap starts to appear between ages 25 and 29 and becomes increasingly pronounced. The figure compares with an economy-wide gap in 2015 of 9.4%, which ONS said was the lowest since its annual survey of hours and earnings (ASHE) started in 1997.

Practitioners continue to benefit from a range of training and development opportunities, with 91% of respondents undertaking some form of continuing professional development (CPD) in the 12 months to 15 January, when the poll closed. Many members also report that their CPD is having tangible benefits for their organisation, with more than one-third (35.5%) saying it had boosted environmental performance and more than one in five (21%) claiming the development has helped to save their employer money.

THE TOP FINDINGS

- The median – or midpoint in the range – annual salary for IEMA members is £38,180, with the mean or average at £43,812.
- IEMA members working in business or industry tend to earn more, with a median annual salary of £40,000, than their public sector counterparts (£34,000), whose pay continues to suffer from the effects of public spending cuts and government restrictions on pay increases.
- Two-thirds of members saw their total annual income increase in 2015, down from 73.5% in 2014. A quarter received no salary uplift in 2015.
- The median going rate for Graduate members starting out in the environment and sustainability profession is £24,500 a year. By contrast, the median salary for IEMA Fellows is £68,000.
- Some 93% of respondents have higher academic qualifications, with only 3% reporting no formal qualifications and half possessing a masters degree.
- The gap between the earnings of men and women in the environment and sustainability profession has widened over the past year, with women now earning a median annual salary that is 16.7% lower than men's. This compares with 12.5% in the 2015 survey.
- However, younger women tend to earn slightly more than their male colleagues in the first few years of post-study employment, only falling behind between ages 25 to 29.
- Job satisfaction remains high, with 82% scoring it 4, 5 or 6 on an ascending six-point scale.
- Almost one in five (18%) of respondents moved to a more senior role in 2015, while 59% are in a managerial or leadership position.
- Most respondents (91%) undertook some form of continuing professional development in 2015, with IEMA webinars or attending a CPD workshop or training course being the most popular.

Salaries by

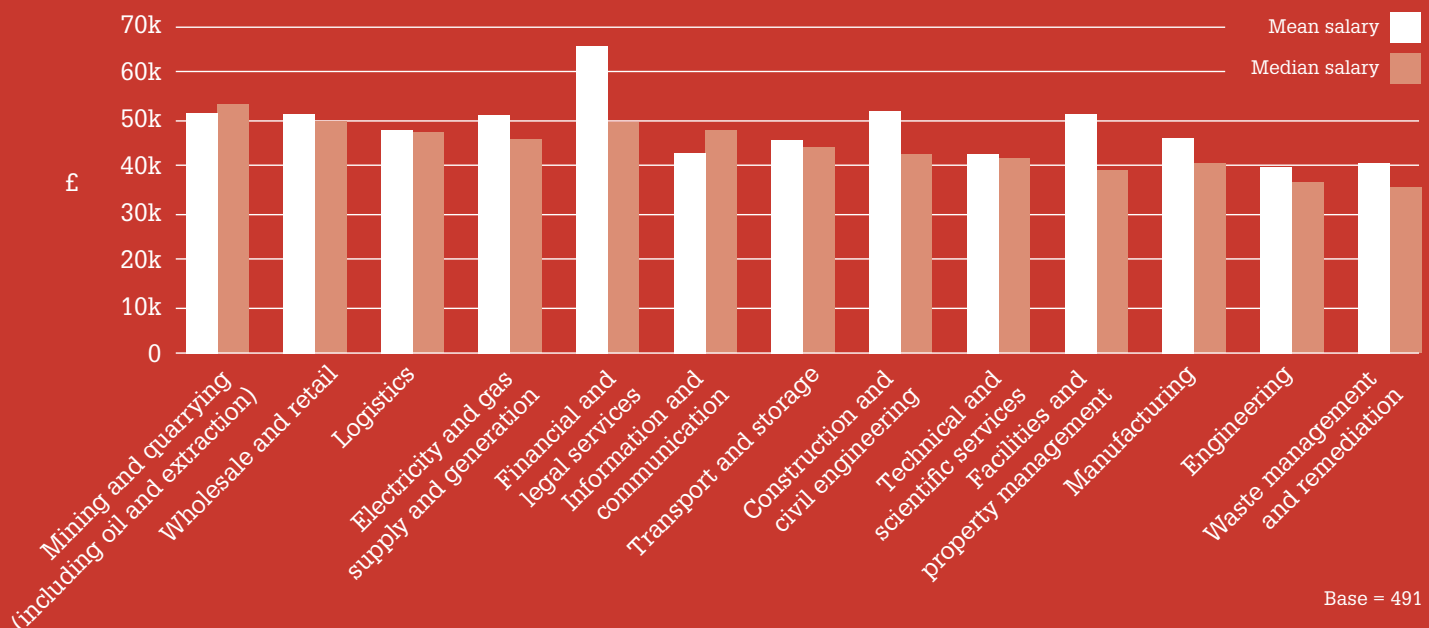
Industry and sector

For the first time, practitioners working in consultancies are earning more than those in business and industry. The standout statistic of the 2016 survey is illustrated in Figure 1, which shows the median salary for environmental and sustainability professionals by broad economic sector. The median annual salary for consultants is £40,500 compared with £40,000 for their colleagues in business and industry. Whereas the median salary for consultants has increased by £4,120, from £36,380 in the 2015 poll, the rate in business and industry has fallen by £1,000. The annual median for IEMA members working in the public sector is £34,000, unchanged from 2015. Median salaries in academia or research and the third sector have increased – from £35,000 to £37,394 and from £28,250 to £35,000 respectively.

Salaries for environment and sustainability practitioners compare favourably to those of UK workers generally. The provisional 2015 ASHE figures from ONS, published in November, put the median gross annual earnings for full-time employees in the UK at £27,600. Salaries are also broadly in line with comparable occupations. At £38,180, the median

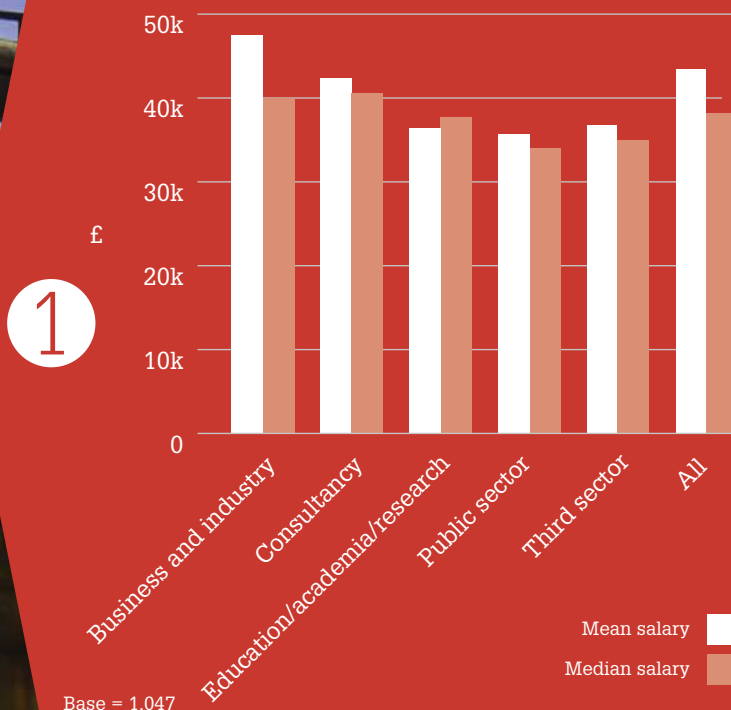


Salary by industry



Base = 491

Salary by broad industrial sector



annual salary for IEMA members is close to that for health and safety professionals. The results of the latest pay and conditions survey by *Health and Safety at Work* (HSW) magazine, published in February, show the median annual salary for health and safety managers in 2015 fell in the pay band £37,500–£39,999. Meanwhile, ASHE data for 2015 found that the overall median salary for full-time professional occupations was £37,024: the median for professionals in business, media and public service was £36,979, while those in science, research, engineering and technology were paid £39,971.

Figure 2 shows the mean and median salaries by industry. As in previous polls, practitioners working in mining and quarrying, including oil extraction, tend to be paid the most, with a median salary of £52,500. This is almost one-third more than for their counterparts working in waste management and remediation (£35,000).

One-third of respondents worked for a consultancy. Analysis of their responses reveals median salaries of £38,500 for practitioners working in planning consultancies; £37,500 in engineering-based consultancies; £36,250 in primarily environment and sustainability consultancies; and £43,500 in management consultancies.

The overall findings for pay in the 2016 survey are evidence that salaries in public sector bodies are generally failing to keep pace with those in the private sector. Public sector pay awards continue to be restricted to an average of up to 1%, whereas pay analysts XpertHR recorded a median basic pay award of 2% in the private sector in the 12 months to the end of October 2015.

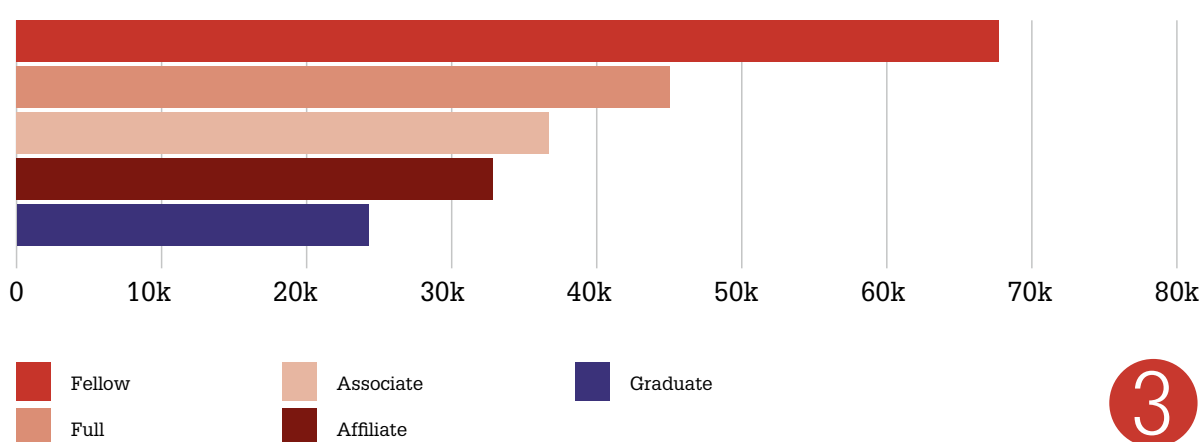


Salaries by

Level of IEMA membership

Median salary by membership level

Base = 1,047



3

Qualifications and experience have a major influence on pay: those with more experience and expertise tend to reap the biggest rewards. IEMA membership status is a good proxy for experience and the build-up of skills and knowledge over time. Figure 3 shows the median annual full-time salaries in 2015 by membership level. It illustrates how earnings change as practitioners gain experience and move from Graduate to Fellow (FIEMA), the pinnacle of professional recognition.

For example, Affiliates tend to be practitioners in the early stages of developing their environment and sustainability careers. According to the poll findings, median salaries for this group (£33,000) is less than half that a FIEMA (£68,000) can expect to be paid each year. The pay differential between Fellows and Full members (MIEMA) (£45,000) is just under one-third, reflecting the leadership role that a FIEMA often performs. Full members earn almost 18% more a year than an Associate (AIEMA). The median salary for Associate members is £37,000. Meanwhile, the differential between a MIEMA and an Affiliate is almost 27%.

The salary differential between the IEMA membership levels is evidence that upgrading not only brings deserved professional recognition but typically also a hefty pay increase. Associate membership demonstrates a broad understanding of environmental issues, and Affiliates are likely to secure an 11% increase in pay, for example, if they upgrade by successfully completing the AIEMA entry exam. To qualify for Full membership, the applicant must:

- be a member of IEMA (Affiliate membership is the minimum requirement);
- have a relevant master's degree or can demonstrate the equivalent level of knowledge; and
- have enough knowledge and practical experience to demonstrate how they meet the standard.

Because the level of knowledge and experience needed to become a Full member is parallel to that required to qualify as a Chartered environmentalist – that is, if an applicant can achieve the MIEMA criteria they should also meet the CEnv standards – successful MIEMA applicants will also be offered CEnv status.

The median salary in 2015 for graduates in the profession (£24,500) is below the average starting salary for graduates generally, which the Association of Graduate Recruiters reported in September had reached £28,000 a year. However, the rate is closer to the median starting salaries reported by the association in the industries many environment and sustainability graduates find employment. These ranged from £26,750 in energy and utility companies and £25,750 in engineering and industrial firms to £25,500 in the construction sector and consultancy, and £23,750 in the public sector.

The median is a good barometer for pay levels across a range, but it does not provide a picture of the scope of potential earnings. The mean data reveals the average salary for a Fellow in 2015 was £70,486; £54,574 for a MIEMA; £40,903 for an AIEMA; £35,576 for an Affiliate; and £27,274 for a graduate. However, a small proportion of practitioners earned a six-figure salary in 2015.

Salaries by

Region

Most pay surveys show that people working in London and the South East typically earn more than those working in other parts of the UK. This is not the case in the environment and sustainability profession. The 2016 poll results confirm what was noticeable last year: there is generally a more equitable picture of pay levels for practitioners across the country, indicating that the labour market for environment and sustainability professionals is not as heavily dominated by the capital and the South East as those for many other professional services roles.

Figure 4 shows median basic salaries by UK region, with those working in the North West (£55,040) and Northern Ireland (£49,719 – though this is based on a sample of less than 20) first and second in the regional pay league. Scotland North (£41,000), where the oil and gas industry dominates and which is normally top, is now fourth. The median salary in the South East, meanwhile, is £39,900. The gap between the highest and lowest (South West) paying regions is more than 37%. However, the differential between Scotland West, in third, and the South East in ninth, is just 5%.

Median salary by region

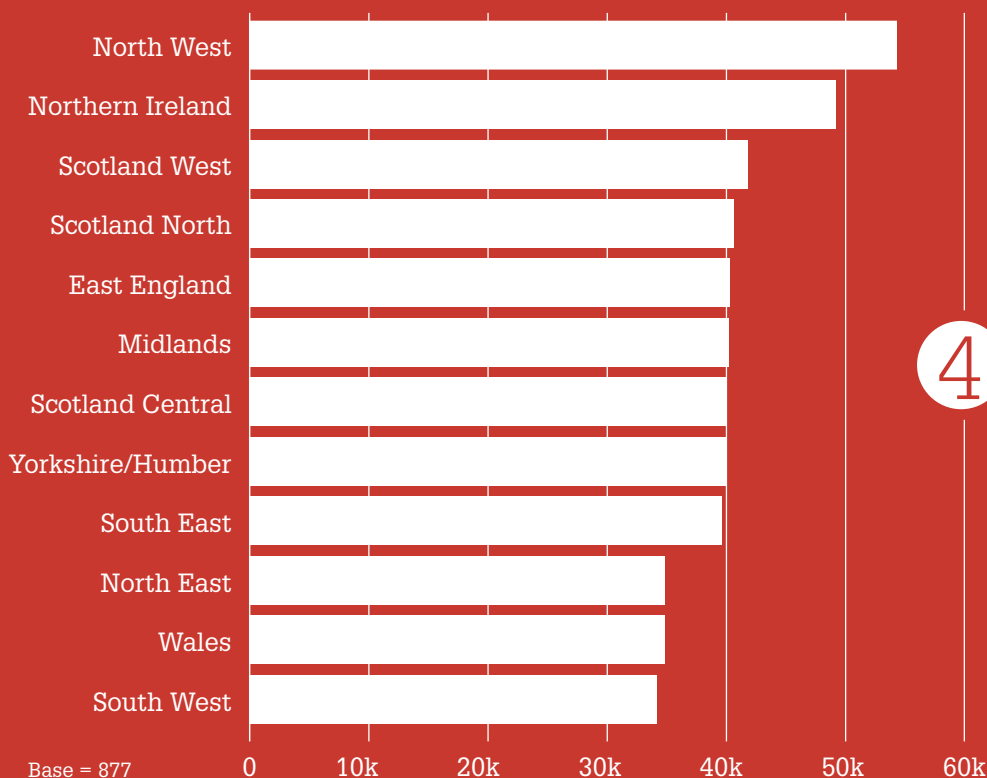
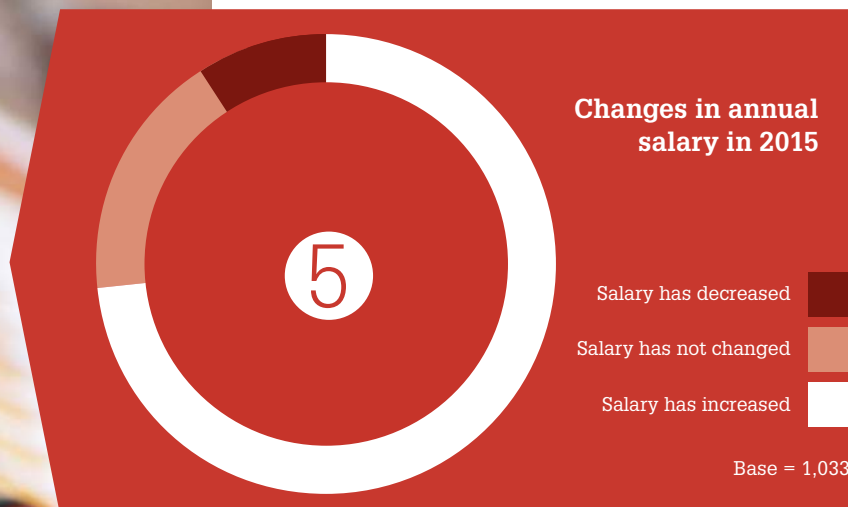


Image: iStock/Savas Keskiner



Changes to salaries

Rises and prospects

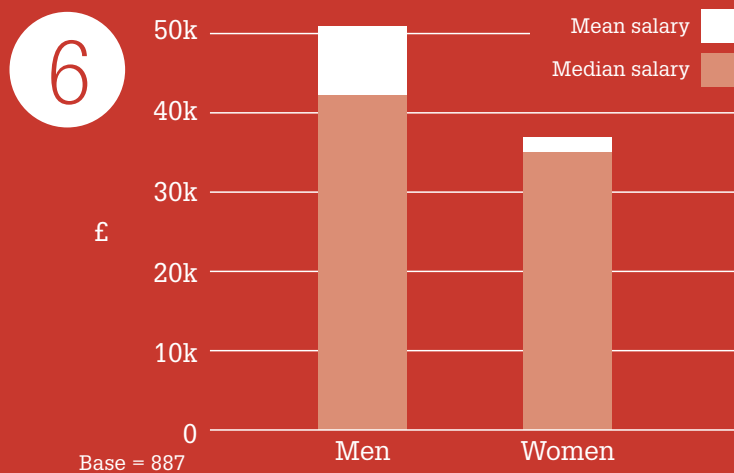
Aside from ability to pay, the most common criteria employers use when deciding whether to increase an employee's pay is individual performance, competences and market rates, according to HR body the Chartered Institute of Personnel and Development. Two-thirds of respondents to the 2016 practitioners' survey reported receiving a pay rise in 2015, down from 73.5% last year's poll. A quarter reported no change (21% in 2015), while 9% experienced a decrease (5%).

The latest figures suggest some employers are reluctant to award increases, possibly reflecting sluggish growth in sectors traditionally employing environment and sustainability professionals. A report at the start of the year from Environmental Analyst, which monitors the environmental consultancy sector, revealed lower-than-expected market growth of 1.6% in 2014 and warned that growth last year would remain fairly modest, at little over 2%. Data published in January by ONS shows that, despite relatively strong 2.4% growth in construction over the first two quarters of 2015, activity in the industry fell by 2% in the second half of the year. Growth in the productive sector in the last six months of 2015 was also flat. At the same time, there continues to be limited scope for pay increases in the public sector.

Analysts XpertHR, which reported a median pay increase of 2% across the economy in the 12 months to the end of October 2015, forecast a similar level for 2016. However, it also reported that more private sector firms (11.7%) expect their 2016 pay reviews to result in a freeze. Meanwhile, pay settlements in the public sector will continue to be subdued.

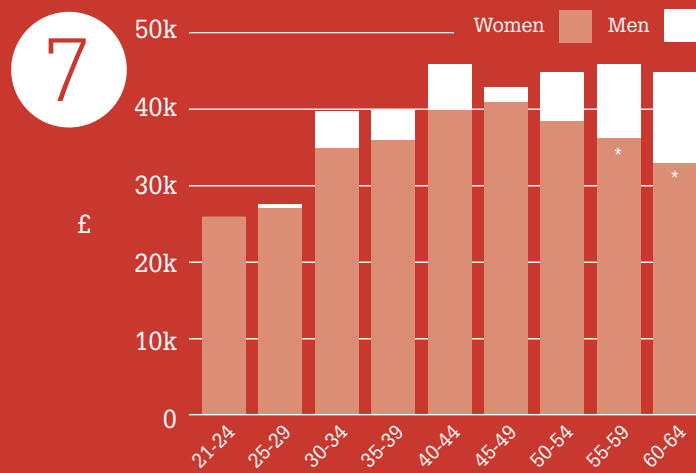


Salary by gender



Salary by age and gender

* Small sample size (fewer than 20 respondents)



Diversity

Age and gender

The gender pay gap 2012–16

	2012		2013		2014	
	Mean	Median	Mean	Median	Mean	Median
Male	£43,128	£38,000	£45,368	£39,000	£47,970	£41,200
Female	£36,491	£32,700	£37,358	£33,050	£38,432	£35,000
Pay gap (£)	£6,637	£5,300	£8,010	£5,950	£9,538	£6,200
Pay gap (%)		15.8		15.3		15.1

	2015		2016	
	Mean	Median	Mean	Median
Male	£45,211	£40,000	£50,278	£42,000
Female	£36,938	£35,000	£37,797	£35,000
Pay gap (£)	£8,273	£5,000	£12,481	£7,000
Pay gap (%)		12.5		16.7

8

Reducing the pay gap between men and women has been a public policy priority for many years. However, although some progress has been made towards gender pay parity, the pace has been slow. Indeed, the ONS reported in November that the gap had changed 'relatively little' over the previous four years. Its data showed that, in April 2015, full-time median pay for men was 9.4% higher than women's, compared with 9.6% in 2014. Nonetheless, the gap last year was the narrowest since the figure was first published in 1997, when it was 17.4%.

By sector, the gender pay gap for full-time employees in the private sector was 17.2% in 2015, compared with 17.6% in 2014, which was also the narrowest since 1997 and continued a long-term downward trend. In the public sector, the gap increased for the second consecutive year in 2015, from 11% to 11.4%.

Nationally, the occupational gender pay gap varied from 4.3% (sales and customer services) to 24.6% (skilled trades). In professional occupations, men earned 11% more than women in April 2015, and 11.2% more in associate, professional and technical occupations. The gap for managers, directors and senior officials was significantly higher, at 18.9%.

Although gender pay inequality in the environment and sustainability profession has been consistently higher than the overall gap reported by government statisticians, it had been narrowing – from 15.8% in 2012 to 12.5%

in 2015 (Figure 8). However, this year the downward trajectory has been reversed, and the gap between the median salaries for men and women now stands at 16.7% – £42,000 for men compared with £35,000 for women (Figure 6). Using the mean measure, which tends to better reflect the fact that there will usually be more men at the top of the earnings spectrum, the differential widens to almost 25% between male earnings of £50,278 and £37,797 for women.

Figure 7 shows that median salaries for male and female practitioners are broadly the same when they start their careers. Indeed, women tend to earn marginally more in the first few years after study – £26,000 compared with £25,875, a 0.5% gap in favour of women. Salary levels start to diverge between ages 25 and 29, however, with the gap generally becoming more pronounced the older the worker – from 2% between ages 25 and 29 to 21% in practitioners in their late-50s.

The pattern of widening gender pay inequality among environment and sustainability professionals as they age is repeated across the economy. In line with the IEMA survey findings, the ONS has found that in the 22–29 age group female full-time workers in the UK earn, on average, slightly more than men. The gap is relatively small up to and including those aged 30 to 39, but from age 40 it widens, with men paid substantially more. According to the ONS, for each additional birthday women earn, on average, an extra 1.9%, while men earn 3% more.

Qualifications, roles and job satisfaction

Snapshot of a profession

The IEMA skills map outlines the broad roles that environment and sustainability professionals perform in organisations, from graduate or entry level to those in operational or specialist roles (practitioner level) and from managers to those in leadership positions. Figure 9 shows that 59% of survey respondents are in a management or leadership role, while 36% are at practitioner level, with just 5% in the early stages of their careers.

The poll provides further evidence that more IEMA members are moving into senior positions. Over the past 12 months, almost one in five (18%) respondents report moving to a more senior role, either in the same organisation or at another one (Figure 11).

IEMA members tend to be highly qualified. Half have a master's degree – a minimum requirement for full membership unless the candidate can demonstrate the equivalent level of knowledge (Figure 10). The poll reveals that around one-third of respondents continue immediately with further academic study after completing one course, with 32% reporting no break between qualifications. One-third have a break of between one and three years. More than one in five take a longer break, however, with 22% gaining a second academic qualification seven or more years after their first. When taking a second degree, there

is a shift away from traditional environment-related courses, such as environment and earth sciences, and geography, planning and development, to those focused on environment management or assessment.

The first degree of 44% of respondents was in environment and earth sciences, and geography, planning and development, but just 19% studied these for their second. By contrast, 45% stated that their second academic qualification was in environment management or assessment, compared with 14% who studied either as a first degree. These figures suggest that many practitioners are keen to develop more general environmental management knowledge to further their careers.

Job satisfaction tends to make staff more motivated and productive. A poll of 1,000 workers by the Institute of Leadership and Management in 2013 found that 'job enjoyment' was the top motivator, cited by 59%. By contrast, just 13% said a bonus would be motivating. The 2016 IEMA practitioners' survey reveals that most environment and sustainability professionals are satisfied at work. Asked to rank their level of job satisfaction on a scale from one (very dissatisfied) to six (very satisfied), 43% rated it five (satisfied) or six. A further 39% rated it four (mostly satisfied). Just 6% of respondents were either very dissatisfied (1%) or dissatisfied (5%). Twelve per cent were indifferent.

Details of the 2016 survey

The 2016 IEMA survey results are based on responses from 1,047 members. These environmental and sustainability practitioners provided pay and working conditions data based on their earnings and working experience during the 2015 calendar year.

The online poll closed on 15 January.

Respondents are representative of IEMA in terms of their membership type: 4% Graduate members; 18% Affiliates; 54% Associates (AIEMA); 7% Full members (MIEMA); 14% MIEMA and Chartered environmentalist; 1% IEMA Fellows; and 1% exclusively GACSO members.

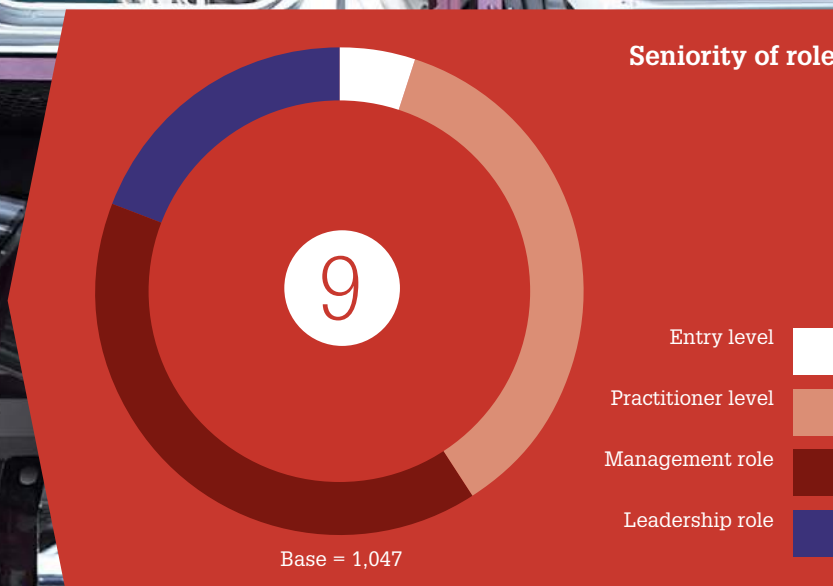
Almost half (47%) worked in business or industry sectors of the economy, most commonly in manufacturing and construction. One-third worked for consultancies, with a further 12% in public sector roles, mostly in regulatory (Environment Agency or Scottish Environment Protection Agency, for example) or central government bodies. Some 4% worked in academic or research roles, while 3% worked in the third sector. Consultant members were most likely to work for firms specialising in environmental or sustainability services

(56%) or engineering (31%), with a smaller proportion in planning (5%), management (5%) or health and safety (3%) consultancies.

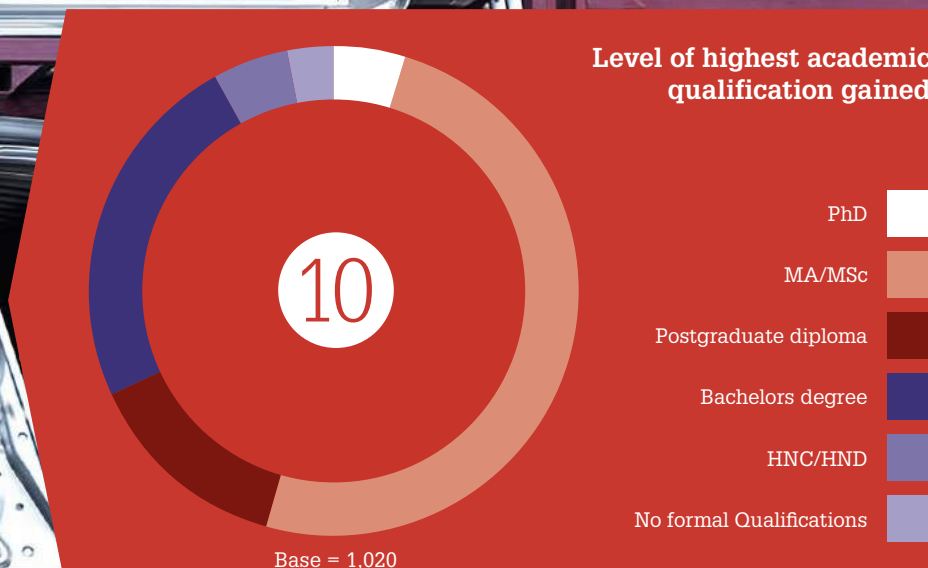
By size, more than half (54%) of members worked for employers with more than 1,000 employees. Some 16% worked for organisations with between 251 and 1,000 employees, while 18% worked for a small (between 10 and 50 employees) or medium-size (between 51 and 250) enterprise. A further 6% worked for a 'micro' firm (10 or fewer employees) and 6% were sole traders.

The headline findings in the figures show both mean, or average, and median salary, which is the midpoint in the range of salaries. When only one figure is used, however, we have highlighted the median because it reduces the influence of outlying salaries at the top or bottom of the pay range. The basic salaries cited exclude overtime, commission, bonuses or other elements of contingent pay that can boost earnings. Some findings have been rounded up or down, so the total may not always add up to 100. Where appropriate, comparisons are made with economy-wide data from the Office for National Statistics (ONS).

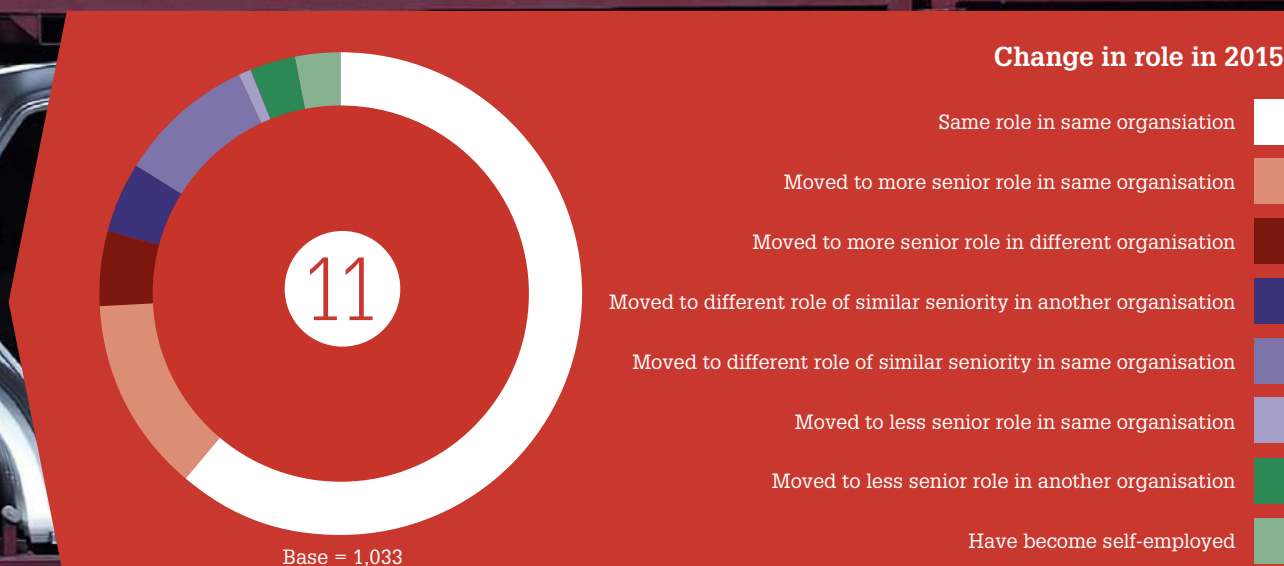
Seniority of role



Level of highest academic qualification gained



Change in role in 2015



Skills, knowledge and experience

Professional development

The codes of practice governing the different IEMA membership levels require the development and maintenance of standards of professional competence and knowledge through a combination of training, learning and practical experience, and through the support of others. To maintain their membership, IEMA with Chartered environmentalist status, Fellows and members on the specialist auditor and environmental impact assessment practitioner register are also required to submit continuing professional development (CPD) log sheets to IEMA yearly, normally when they renew their membership.

The practitioner survey results show that 91% of respondents undertook some form of CPD in 2015. CPD is not limited to formal training. The most popular form of professional development in 2015 was participating in IEMA webinars (see p52 for upcoming webinars), followed by attending a CPD workshop or training course, reading *the environmentalist* and attending an IEMA-approved/certificated training course (Figure 12).

Half of respondents report that the main motivation for undertaking professional development is to develop knowledge and skills in their current role. More than a quarter (27%) participate in training and attending events and conferences as part of what they describe as a continuing process. In 64% of cases, the development is paid for by the practitioner's employer, either directly (29%) or through the employer reimbursing the employee the full amount (35%).

Professional development activities

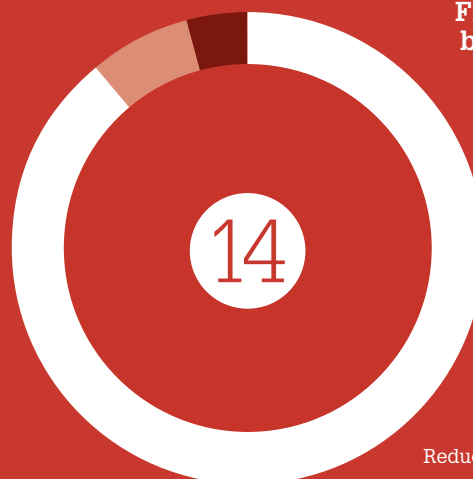


Base = 955

12



Firms' financial benefits of CPD



Base = 183



13

Organisational benefits of CPD



Base = 1,047

Boost environmental performance	Save energy
Train/mentor other members of staff	Reduce pollution
Improve reputation	Reduce emissions
Boost sustainability performance	Compelling business case for investment
Save money	Save carbon
	Save water

Research by the Chartered Institute of Personnel and Development in 2015 revealed that employers broadly align staff learning and development (L&D) with business strategy. The HR body's annual learning and development survey found that L&D is extremely aligned with the needs of the business in a quarter of organisations, with a further two-fifths reporting that they are broadly aligned, with some discrepancies. The survey also showed that most employers evaluate L&D initiatives – more than one-third (37%) of organisations limited their evaluations to the satisfaction of those taking part, while slightly less (30%) quantified the impact of the business, such as on efficiency.

The financial outlay on CPD by employers of IEMA members appears to be well worth it, with practitioners reporting that development activities have directly benefited their organisation (Figure 13). More than one-third (35.5%) said their CPD had directly helped boost their organisation's environmental performance. One-third reported that their development had enabled them to help upskill colleagues by running training events internally or through mentoring. Twenty-nine per cent of respondents said their CPD had enhanced the reputation of their organisation, while 22% said it had boosted the sustainability performance of the business.

More than one in five (21%) said the training and development had led to direct financial savings for their organisation. Some 90% of this group said the CPD had led to interventions that reduced their organisation's overheads; 7% said taxation had been reduced because of actions spurred by their development; and 4% reported that the CPD had resulted in reduced insurance premiums (Figure 14).

The savings were not wholly financial, however. Figure 13 also shows the training and development activities of IEMA members resulted in reduced energy use (20%), less pollution (16%) and a cut in general emissions (16%). It also helped organisations reduce carbon emissions (14% of cases) and water consumption (10%). Around 15% of respondents said their CPD enabled them to return to their organisations and produce a compelling case for investment.

Image: iStock/Alan Lagadu

Rethinking the carton

Catherine Early finds out how Tetra Pak is creating packaging that saves more than it costs

The potential to create an enormous waste footprint is plain at Tetra Pak. Last year the Swedish food processing and packaging manufacturer supplied 180 billion cartons, enough to hold 80 billion litres of product, to some of the world's biggest food and drink brands, including Coca-Cola, Pepsi and Danone. With output of such size, the company is aware of the need to ensure that what leaves the factory gates is recyclable and recycled.

Growing awareness

Tetra Pak sees a trend for increasing awareness of the environmental credentials of packaging from both its customers in the food and drink industry and retail consumers. Almost 80% of consumers say they 'often' or 'sometimes' buy products with environmentally sound packaging, according to the company's latest survey of more than 6,000 people and 240 retailers, manufacturers and NGOs in 12 countries.

The results of this survey convinced Tetra Pak that environmentally sound packaging is a way for it to differentiate itself in the market and the firm has been focusing on increasing the use of renewable materials for some years. In 2007, it secured Forest Stewardship Certification (FSC) for the first time, and has now expanded this to cover around a quarter of its products.

In 2011, it launched caps for cartons made from bio-based plastics, which are derived from Brazilian sugarcane and have a lower carbon footprint than conventional fossil fuel-based plastics. Tetra Pak claims that its customers can switch to these without investing in different filling machines and is rolling them out across all its advanced packaging formats. Last year, 2.7 billion Tetra Paks had these caps. The company also produces containers with pre-cut perforation, enabling consumers to detach the plastic top from the carton sleeve so the two components can be recycled separately.

Going further

However, the company's main ambition is for all its packaging to be made from 100% renewable materials, including the polymers used to coat containers to prevent moisture entering or escaping. In 2014, it



Dealing with aluminium in packaging



© iStock.com/wx-bradwang

Cartons designed to keep the contents sterile without refrigeration are also lined with a layer of aluminium to give protection from oxygen and light. These features allow perishable food to be kept safe without cold storage for months, a vital advantage in the developing world. Though this layer is eight times thinner than a human hair, Tetra Pak acknowledges that the material has the greatest single environmental impact of any part of the packaging. Mining of bauxite, from which aluminium is derived, can have many environmental impacts including on the land, chemicals, working conditions and health and safety. Aluminium can be hard to trace back to its source since it is traded on an open exchange market.

Tetra Pak's solution is to collaborate with non-governmental organisations and other companies whose products use metal. The Aluminium Stewardship Initiative (ASI) now has 23 members, including Rio Tinto, Alcoa, BMW, Jaguar Land Rover and Coca-Cola, and plans to develop standards covering all stages of production and transformation, including bauxite mining, alumina refining, aluminium production, material conversion and the remelting of scrap. The group has already developed a performance standard covering:

- governance (policy, management and transparency);
- environment (water, greenhouse-gas emissions, biodiversity, effluent and waste); and
- social (human rights and health and safety).

The International Union for the Conservation of Nature (IUCN) is coordinating development of the standard. The ASI held an event in Thailand in May 2015 to gather feedback from people in India, Cambodia, Australia and Suriname, as well as NGOs in other countries, such as the Asia Indigenous Peoples Pact foundation (AIPP) and the Forest Peoples Programme.

The meeting led to guidance on the effective implementation and assurance of compliance, a pledge for continual engagement with indigenous groups and a complaints procedure. The ASI is now working on a chain of custody standard that companies can use as a responsible sourcing tool, and on how these will be audited and certification granted.

Mario Abreu, Tetra Pak's vice-president of environment, explains the firm's motivation to set up the ASI: 'It is easy for a company to say what they want from their suppliers. But it is much more credible to form a multi-stakeholder group and say what it is we should be asking our suppliers. The goal is for it to become a benchmark for industry.'



© Tetra Pak



Globally, about 650,000 tonnes of Tetra Pak cartons are recycled each year – 63% of UK local authorities offer collection services

© Tetra Pak launched the Tetra Rex bio-based package, made entirely from plant-based materials. All the paperboard used in the product comes from FSC-certified and controlled sources, and is traceable to its origins, the company says. The product has achieved the highest rating under the OK Biobased scheme, run by Belgian-based certification body Vincotte.

The laminate film for the packaging and the neck of the opening is made of low-density polyethylene, produced by Brazilian chemicals company Braskem. The film is derived from sugarcane, as is the high-density polyethylene used for the cap. Tetra Pak's vice-president of environment, Mario Ebreu, explains that the sugarcane is grown in south-east Brazil on land that was degraded or that the government has set aside for the crop. Having a sole supplier rather than a complex supply chain makes it easier for Tetra Pak to keep track of its environmental performance, Ebreu says. Tetra Pak is working with Braskem on achieving certification for the bioethanol it produces, under either the Bonsucro scheme or the Roundtable for Sustainable Biomaterials.

Erin Simon, deputy director of private sector engagement and a plastics scientist with WWF, has worked with Tetra Pak to help it understand the implications of moving from fossil-based plastics to bio-based plastics. This shift brings in a new set of environmental and social impacts compared with conventional plastics, she says.

'Issues around sustainable sourcing of bio-based feedstocks need collective action, for example reducing land use change issues, reducing water use and quality issues and chemical use,' says Simon. 'You have to improve supply chain transparency right through to farm level and increase collaboration.'

Many companies are looking to move towards bio-based plastics. Coca-Cola launched its plant bottle in

2015 and Lego has pledged to entirely replace fossil-based plastics in its products by 2030. Companies that are part of the Bioplastic Feedstock Alliance, such as P&G, Danone and Unilever, are also leading on this and are sharing innovations, she adds.

Simon says: 'The conventional plastics industry has been around for 60 years and is really efficient so sharing research and development and working closely together on bio-based plastics is really exciting. Tetra Pak has been at the forefront of that.'

But there are still many challenges to overcome in the development of bioplastics. Simon warns: 'Just because some packaging comes from plant materials, it does not necessarily mean it is sustainable, and the right practices need to be put in place to manage all the potential impacts.'

'We need to talk about responsibly managing resources no matter what they are producing, and make sure we focus on what the true issues are for every feedstock in every region of the world because they're going to be different every time.'

A circular approach

Of course, there is no point having highly recyclable packaging if no one is recycling it. Tetra Pak has a two-pronged approach to this, working both to increase recycling infrastructure and educate consumers. It targets action at each of the 170 countries in which it operates since they are at different stages of developing recycling infrastructure, says Mario Abreu, the firm's vice-president of environment. 'In some countries there is no recycling infrastructure, so there's no point raising consumer awareness. In other countries, there's lots of infrastructure, but no awareness,' he says. The company aims to understand how it can enable more recycling for consumers, country by country.

Tetra-Rex bio-based packaging



Harvesting sugarcane for bio-based packaging

Around 650,000 tonnes of Tetra Pak cartons are recycled globally, mostly into cardboard. The machinery needed to recycle a Tetra Pak is the same as that used for standard cardboard, with the different layers of the carton turned into slurry. This is then diluted to wash away the cardboard fibre from the polymers and aluminium foil. The only difference is that cartons are usually kept separate from cardboard to avoid contamination with tape or staples, for example, so that the end material is sufficiently consistent for recycling. In the UK, Tetra Pak cartons are recycled by Sonoco, which has a plant near Halifax, West Yorkshire. This opened in 2013 and is the UK's only drinks carton recycling facility, transforming used products into industrial-strength coreboard at the site's paper mill.

However, the Halifax facility was not the first of its kind. One in Fife, Scotland, closed in 2006 due to insufficient volumes, and the material was sent to Sweden and Italy for recycling. Since the Halifax plant opened, the number of local authorities offering kerbside collection of cartons has increased to 63%. A further 29% have collection points in their areas. The Alliance of Beverage Cartons and the Environment (ACE UK), which represents Tetra Pak and other carton manufacturers, gathers the material and sends it to the Sonoco plant.

In the US, which typically has poor recycling infrastructure, Tetra Pak has worked with the Carton Council to increase access to carton recycling. Five years ago, the proportion of households able to recycle cartons was around 20%, but this has risen to 58%. The goal is to reach 60% by the end of the year, Abreu says.

Final strand

The final strand to Tetra Pak's recycling ambition is to find markets for the materials produced in the process. It is not currently worth the cardboard manufacturers' effort to recycle polyethylene and aluminium, Ebreu explains. However, the company is working on technologies to recover these materials for other markets. For example, it has used the polymers to make roof tiles for the developing world, which have the added benefit of reflecting sunlight, cooling the area under the tiles. The product is very popular in Brazil, Ebreu says. Tetra Pak has a target to double the number of its cartons being recycled globally by 2020, which will give it bigger volumes to invest in facilities to make products from the recovered materials.

'When we can recycle in high volumes it will be worth creating technologies that will separate polymers and foil further,' Ebreu says. 'The foil can be recovered into flakes, to be used in industry. But to do this you need high volumes so, the more we develop recycling, the more quantities arrive, the more feasible and justifiable it is to invest in plants like this.'

Five beverage manufacturers (below) have so far signed up to use Tetra Pak's renewable packaging, known as Tetra Rex. Product director Christina Chester says Tetra Pak targeted milk packaging first because it does not need a layer of aluminium (see panel, p35) inside it. The company is expecting to produce more than 100 million renewable cartons in 2016. The carbon footprint of the bio-based package is 35% lower than that of a fossil-based package, according to a lifecycle analysis carried out by Braskem in 2013.

'We started in Europe because European customers are very switched on to the environment, but it has potential everywhere,' she says. The common denominator of customers so far is that they all have strong sustainability agendas, Chester says. 'Customers see it as a differentiator because not everyone has this yet.' The sugarcane-based plastics are more expensive than those that are fossil-based, Chester admits, but adds: 'We fully expect the price to go down in future when the product gets more efficient.'

Tetra Pak is hoping to deliver 100 million bio-based cartons in 2016, a small number compared with its 180 billion carton production. But a spokeswoman says it is only the start of the company's renewable journey: 'The progress in this one year has been remarkable. We will continue expanding our bio-based package portfolio and increase this percentage in the years to come.' The drinks manufacturers that have taken the renewable packaging route are:

- **Valio** – the Finnish company chose Tetra Rex bio-based packages for its lactose-free, semi-skimmed milk in a three-month trial. It gathered feedback on the packaging from consumers online and the positive response led it to roll out the packaging to its entire organic range.
- **Arla Foods** – Swedish firm Arla is using the packaging for its organic milk range. The firm's carbon reduction strategy includes using packaging that is made from renewable materials.
- **Vermlands Mejeri** – a small dairy in Sweden that has started production in the past year. Its business model is that everything is sourced locally, including the packaging.
- **Vecozuviel** – this Dutch milk producer also chose Tetra Pak to complement its sustainability agenda, along with using renewable materials and energy and sourcing its milk from local farms.
- **Tine** – is a Norwegian milk producer that has been testing the renewable packaging for its organic range. Tine is planning to introduce it to its entire milk range in 2017.



In good spirits

Paul Suff hears how Bacardi is aiming to enhance the environment by putting back as much as it takes

Bacardi was founded in Cuba in 1862 by Facundo Bacardi Massó to help meet the colonial Spanish government's need to reduce surplus molasses on the Caribbean island. Fast forward 154 years and the spirits company is still rising to external challenges, with social and environmental impacts driving decision-making as it aims to be a better and more sustainable business in the long term.

'Good Spirited: building a sustainable future' is the title of Bacardi's sustainability strategy, which is focused on responsible sourcing, operational

efficiencies and global packaging. 'Our vision for sustainability is to have a balanced impact on the environment in which we operate, putting back as much as we take away,' says Rodolfo Nervi, global quality, environment, health and safety director.

The strategy was announced in 2014 and requires the brands, which also include Bombay Sapphire gin, Dewar's blended Scotch whisky and Martini vermouth and Italian sparkling wines, to reevaluate and augment their systems to achieve the overall objective of having a net-zero impact.

Learning points

- Sustainability needs to make business sense: good for the environment and good for the business.
- 'Reduce, reuse, recycle' is the key principle behind decreasing GHG emissions, water consumption and waste.
- A successful global sustainability strategy integrating local knowledge and expertise – the right balance of corporate and local resources.
- Establish metrics to monitor and drive decisions.
- Initiatives need to be locally relevant and demonstrate measurable benefits to watersheds and neighbours.

Making business sense

In terms of operational efficiencies, Bacardi has set company-wide goals to reduce water use and greenhouse-gas emissions by 55% and 50% respectively by 2017 against 2006 levels. The firm is also aiming by next year to have reduced packaging weight across its products by 10%.

Nervi points out that the spirits industry is energy- and water-intensive. In 2006 it took about 12 litres of water to produce one litre of Bacardi rum. That has been reduced to ten. Action to cut consumption of energy and water is therefore key to the company achieving its ambition to be more sustainable. But Nervi

stresses that measures to reduce emissions or water consumption must be viable. 'Sustainability needs to make business sense: good for the environment and good for the business,' he says. 'Energy efficiency tends to have a relatively fast payback, but improving water efficiency can be more difficult and tends to require high levels of capital investment.'

Julio Torruella, global environment director, describes the water reduction target as challenging. Whereas reducing GHG emissions is necessary across the company's global operations, he says tackling water use is more of a local issue and may require different solutions, particularly in parts of the world where demand for it outstrips supply.

'Reducing consumption in Scotland is not the same as reducing it in India,' he says. 'We've looked at our global operations and identified where water stress is an issue.' On the island of Puerto Rico access to freshwater can be difficult but it is home to the world's largest premium rum distillery. Bacardi collects and treats the water used to clean the oak barrels in which the rum matures as well as the plant's domestic sewage water. This is reused to cool equipment used in the distilling process, saving around 57,000 litres a day.

Nervi says water-saving programmes do not focus only on reduction at source but include water harvesting. At Bacardi's distillery, near San Juan, initiatives are being implemented to collect rainwater from the roofs of the rum ageing warehouses and tank farms' secondary containments to reuse for process and utilities needs. Meanwhile, the Bombay Sapphire distillery at the renovated Laverstoke Mill in Hampshire, which received the BREEAM award for industrial design in 2014, has rainwater harvesting and flow restricting water devices throughout the site (see panel, right). 'We examine every option to give water a second life,' says Nervi.

Between 2006 and 2014 Bacardi increased water efficiency globally by 46.5% through better operating discipline, water-conservation measures, recycling and more efficient equipment, he says.

Improving the quality of wastewater discharges is also a priority. Bacardi's 2014 corporate responsibility report reveals that 1,147,000m³ of wastewater was discharged that year from the firm's global production facilities, and 351,000m³ (or 23%) was applied to cropland as a fertiliser or for irrigation.

Powering ahead

Wastewater also provides Bacardi with energy. The company patented its own technology for using anaerobic digestion (AD) to treat wastewater and to produce energy from biogas, with the first plant opening at the Puerto Rico rum distillery in 1982. There are now three digesters at the site that treat 500,000 gallons of 'still bottoms', unfermented molasses and water from the distillery each day to produce biogas. This powers a cogeneration system to produce the electricity and steam used to make rum.

Nervi says Bacardi is tackling its emissions by improving energy efficiency and investing in renewables. Initiatives include installing two wind turbines at the Puerto Rico distillery and switching from fossil fuel



Waste botanicals

BREEAM tonic for Bombay Sapphire distillery



Laverstoke Mill in Hampshire was, in 2014, the first distillery to win the BREEAM industrial award and the first refurbishment project anywhere to achieve an outstanding rating, scoring 86.81% under the method for assessing the sustainability of buildings.

The disused former paper mill, which dates from the 18th century, includes Grade II listed buildings and is set on a site of special scientific interest with a section of the River Test flowing through it. More than 80% of the original buildings were retained. The three still houses and visitor centre use renewable energy from a biomass boiler, solar photovoltaic array and a 6kW hydroelectric turbine. Unused heat generated during gin-making warms the unique glasshouses at the site, in which many of the botanicals used in Bombay Sapphire gin are grown.

The project scored 100% of available credits in the BREEAM energy and management categories (2008 version) and more than 90% in the water, materials and waste categories. An additional 5% worth of innovation credits were given for the high performance levels achieved.

Dewar's Aberfeldy distillery steams ahead



Highland single malt whisky has been produced at the Aberfeldy distillery since 1898 and in 2014 Dewar's installed a biomass steam boiler there, reducing the carbon footprint by 90%.

The boiler, which replaced one run on oil, was part funded by the Green Investment Bank. It burns wood pellets from Balcas and uses renewable energy and raw materials sourced from local, sustainably managed forests at the timber processor's Invergordon plant.

Dewar's is a member of the Highlands-based Combination of Rothes Distillers, which supports a biomass energy plant in Speyside. This uses by-products from nearby malt whisky distilleries to produce renewable energy for the local community as well as a liquid animal feed product called pot ale syrup. The site comprises a 7.2MW capacity power plant and a 66.5t/h pot ale evaporator plant.

to hydro energy for vermouth production in Italy. The turbines generate about 500,000 kWh of electricity a year, offsetting more than 400 tonnes of CO₂. In September 2014 Bacardi updated progress at the two plants against the 2006 baseline: a 47% cut in GHG emissions at the rum distillery and a reduction of more than 30% at Martini.

In the UK, Dewar's Aberfeldy distillery in the Scottish Highlands boasts a biomass boiler (see panel, above). The wood-pellet boiler came on stream at the end of 2014 and was funded partly by the Green Investment Bank. It replaced a heavy fuel oil boiler and has cut the distillery's annual carbon footprint by 90%, saving around 6,500 tonnes of CO₂ and reducing Bacardi's overall GHG emissions by 6% a year.

At the distillery in Arandas, Mexico, a mixture of agave bagasse (the fibrous matter left after juice is extracted) and woodchips is used in a biomass boiler to generate steam for agave sugar extraction, cooking and distillation to produce Tequila Cazadores. About 11,000 tonnes of the agave bagasse generated onsite from the sugar extraction process is burned every year as biomass fuel, says Torruella.

A good source

Bacardi envisages all raw materials and packaging to come from sustainably sourced, renewable or recycled materials. Molasses, a by-product of sugarcane, is a key ingredient in rum and Nervi says the aim of the sourcing vision is to reduce environmental and social impacts, while maintaining or enhancing the economic status of growers and suppliers.

The firm is a founder member of Bonsucro, the not-for-profit, multi-stakeholder organisation established in 2008 to promote sustainable sugarcane. Bacardi wants all sugarcane-derived products to come from sustainably certified sources by 2022, with an interim 40% target by 2017.

Nervi says the 2022 goal is well within reach. In Fiji, Bacardi championed 'model sugarcane farms' in partnership with WWF in a three-year pilot. The programme focused on helping farmers increase crop yields while reducing water run-off and other older practices that are hazardous to the Great Sea Reef, the world's third longest of its kind. Initiatives included simple changes, such as terracing and carefully distancing rows of sugarcane, to help control nutrient and seed run-off into waterways that lead to the reef.

Measuring progress

In March 2014, Bacardi unveiled an auditing method to accurately measure performance and progress against its key environmental sustainability objectives. Called BEST – Bacardi Environmental Sustainability Tracking – and developed in association with a team of accounting academics at Poole College of Management at North Carolina State University, the method uses flexible budgeting to measure the performance in one reporting year against a base year.

'Rather than dividing the volume of water used by the amount of alcohol produced to assess efficiency, BEST calculates very specific data from a set baseline for each product,' says Nervi. 'This is important because the energy and water profile can vary depending on the product. For example, it requires more water to produce tequila than rum.'

'BEST enables Bacardi to measure improvements year on year. The results provide an accurate assessment of not simply the cost of goods, but also the degree of efficiency in Bacardi's use of resources.' Bacardi is the first company to apply this accounting method to monitoring environmental metrics.

Measuring progress is one thing, but Nervi stresses that engaging staff is key if the company is to achieve its targets. He says the Good Spirited initiative empowers the firm's 6,000 global workforce to contribute more directly to its environmental sustainability programme. A sustainability hub has been created on the company's intranet and more than 50 employees have volunteered as 'green champions'.

Nervi points out that the central sustainability team is relatively small, numbering just five, so it relies on a network of local teams, including volunteer 'green champions', and experts, such as engineers, to identify and assess opportunities to boost efficiency. Sites are encouraged to learn from each other and share best practice. 'Bacardi operates 30 production facilities across the world, so there is a profusion of languages and regulations,' says Nervi. 'Strong local knowledge is therefore very important. Expertise is also crucial. There is no point solving one problem by creating another because you haven't, for example, considered the energy implications of installing a new water treatment plant.'



Shedding light on the dark side

Martin Broderick and Bridget Durning on improving assessment of cumulative effects

Five years ago cumulative effects assessment was portrayed as a 'dark art' and a 'wicked problem' by Canadian consultants George Hegmann and GA Yarranton. A review of current practice when applying it to offshore wind farms suggests the damning descriptions that emerged in that study (more of which later) still hold good now. This latest investigation revealed evidence of continuing problems, though there were signs of improvement, and found a lack of consistency in terminology and of transparency in the methodology used.

It recommends a three-pronged strategy to improve cumulative assessment: adoption of a clear definition of cumulative effects; further development of guidance, such as the cumulative effects assessment analytical framework developed by Oxford Brookes University for the Natural Environment Research Council (NERC); and the publication of more best practice case studies.

In law

Cumulative effects derive from a combination of multiple developments and events. Effects from a single development may not be serious on their own but, when combined with others, the result could be significant.

Oxford Brookes University, with support from the NERC, analysed eight nationally significant infrastructure projects (NSIPs) in England and Wales and two from Scotland to examine cumulative effects assessment (CEA) in the environmental impact assessment (EIA) and habitats regulations assessment (HRA) process.

The licensing procedures for infrastructure development require a CEA if the consequences of multiple projects or activities create an effect greater than or different from that of the individual projects. Although the requirement to consider cumulative effects before a development is established in EU EIA legislation, in practice it is complex and research suggests that practice is poor globally.

All proposals for projects that are subject to the EU EIA directive (2011/92/EU as amended) must be accompanied by an environmental statement (ES) that sets out the outcome of assessment of the likely significant environmental impact of the development.

The 2011 version of the directive refers specifically to the need to consider the effects of proposed projects and developments on 'human beings, fauna and flora, soil, water, air, climate, the landscape and seascape, material assets and cultural heritage'. It requires the

assessment of the likely significant effects, covering the direct and indirect ones, as well those that are secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative at all stages of the project. It also demands that measures are set out for avoiding or mitigating significant adverse effects.

The habitats directive (92/43/EEC) requires that an appropriate assessment is performed if a plan or project is likely to have a significant effect on a Natura 2000 site – that is, a special area of conservation (SAC) designated under the directive or a special protection area (SPA) classified under the EU birds directive (2009/147/EC). The process of screening for likely significant effects and the undertaking of an assessment is known as an HRA.

Guiding principles

A Canadian review of CEA practice in 2013 (bit.ly/1PLmJL5) highlighted areas for improvement. The researchers, from the School for Resource and Environmental Studies at Dalhousie University and ESSA Technologies, recommended that future guidance ought to focus on several factors, including:

- defining concepts of cumulative effect – they suggest simple sentences are not sufficient and conceptual frameworks are required;
- the use of scenarios and particularly an expanded definition of what are ‘reasonably foreseeable projects’;
- the evolution of analytical methods need to be transparent in records of the outcome of assessment;
- better collaboration between stakeholders and implementation of governance models, which need to be acknowledged and addressed;
- the adoption of thresholds and balancing the precautionary approach;
- strengthened follow-up and monitoring post consent; and
- sharing of accumulated knowledge.

The wind energy industry identified the importance of these factors in 2013 in the Renewables UK publication *Cumulative Impact Assessment Guidelines: guiding principles for cumulative impacts assessment in offshore wind farms*. The guidelines set out 11 principles, which were developed by industry, regulators and stakeholders:

- a. CEA is a project level assessment, carried out as part of a response to the requirements of the EU EIA, habitats and birds directives, and designed to identify potentially significant

impacts of developments and possible mitigation and monitoring measures.

- b. Developers, regulators and stakeholders should collaborate on the CEA.
- c. Regulators and their advisers should provide clear and transparent requirements for the CEA.
- d. CEA should include early, iterative and proportionate scoping.
- e. Boundaries for spatial and temporal interactions for CEA work should be set in consultation with regulators, advisers and other key stakeholders, and in line with best available data.
- f. Developers should use a realistic ‘project design envelope’ or parameters.
- g. Developers should consider projects, plans and activities that have enough information available in order to undertake the assessment.
- h. The sharing and common analysis of compatible data enhances the CEA process.
- i. CEA should be proportionate to the environmental risk of the projects and focused on key impacts and sensitive receptors.
- j. Uncertainty should be addressed and, where practicable, quantified.
- k. Mitigation and monitoring plans should be informed by the results of the CEA.

Clarifying terminology

It was the 2011 study *Alchemy to Reason: effective use of cumulative effects assessment in resource management* (bit.ly/1TPlzzU) that described CEA as a ‘dark art’ and a ‘wicked problem’. It stated that CEA was ‘like forecasting weather or climate [because] the system under examination is complex and often responds to disturbance in a non-linear fashion’. CEA does suffer from ambiguous and sometimes confusing terminology (see panel, p43). There are many definitions of cumulative effects, depending on the context.

Best practice should be to clearly set out the concepts and definitions of CEA. The Oxford Brookes NERC-funded project includes a short definition to guide practice and to help bring some transparency to the complex ‘dark art’ of CEA. It defines cumulative effects as ‘those that result from additive effects caused by other past, present or reasonably foreseeable actions together with the plan, programme or project itself ... and synergistic effects, which arise from the reaction between effects of a development plan, programme or project on different aspects of the environment’. In other words, cumulative effects are those added by or that result from the interaction of two or more projects or activities.



This definition is also included in the Renewables UK guide as well as in the BSI guide to EIA for offshore renewable energy projects (PD6900: 2015). The BSI publication is free (bit.ly/1nUn4jL) and covers undertaking EIA for offshore wind, wave and tidal projects. It focuses on the main component of the offshore renewable energy project rather than supporting infrastructure and covers all the elements of the EIA process, such as screening, scoping, determining environmental impacts and the environmental statement. It also addresses mitigation and monitoring plans, consultation and communication.

In legislation, regulations, industry and in practice, the terms 'impacts' and 'effects' are often used interchangeably. However, they are different. To use the analogy of the hammer hitting and breaking a mirror, the 'impact' is the tool hitting the glass, while the 'effect' is the broken glass on the floor. The difference needs to be recognised and it is worth noting that the EU directives tend to use effects. Nonetheless, the language used in the EIA and SEA (strategic environmental assessment) directives has caused practitioners and regulators considerable confusion. Adoption of the terms 'additive' and 'synergistic' as used in the definition above should help to clarify the situation, and these two types of cumulative effects should be considered when performing a CEA.

Analytical framework

As part of the university's research, an analytical framework has been developed to ensure that all relevant issues have been included in the assessment process. It follows 10 steps:

1. Clearly explain the definition of cumulative effects being applied. Identify likely significant CEA aspects associated with the proposed project or plan and define approach.
2. Establish temporal and spatial limits – spatial can be different in noise, air quality, landscape and visual impact assessment, for example.
3. Identify other past, present and reasonably foreseeable future projects that could affect receptors (long list) – valued ecological components, humans and resources.
4. Establish sensitivity of receptors and define thresholds.
5. Define and describe the baseline.
6. Establish source-pathway-receptor (short list) and consult on the list, giving reasons for dropping projects from the long list (stage 3).
7. Assess significance of effects – cumulative, additive and synergistic.

Confusing terminology in law

Additive effects

– those that result from additive effects caused by other past, present or reasonably foreseeable actions, together with the plan, programme or project itself

- EIA Directive (2011 version) refers to these as 'cumulative effects'.
- European commission/Hyder (1999) guidance refers to these as 'cumulative impacts'.
- SEA directive refers to these as 'cumulative impacts'.
- EU habitats directive refers to these as 'in-combination' effects.

Synergistic effects

– these arise from the reaction between effects of a development plan, programme or project on different aspects of the environment

- EIA Directive (2011) refers to these as 'interrelationships' and effect 'interactions'.
- European commission/Hyder (1999) guidance refers to these as 'impact interactions'.
- SEA directive refers to these as 'in-combination or synergistic' impacts.
- EU habitats directive does not refer to these separately.

8. Modify or add alternatives or propose mitigation to avoid or reduce cumulative effects.
9. Detail the uncertainty and limitations in the assessment.
10. Monitor and manage using an environmental management plan.

Driving practice

The Oxford Brookes University research has identified that CEA practice is improving and evolving. Key to driving forward practice has been the requirements made by decision-makers and statutory stakeholders at the scoping stage, particularly due to the Planning Act 2008. Practitioners are also being more transparent in their methodologies, which will aid others to reflect on their own practice and to innovate. Examples of good practice will help this. Improving assessment practice, which is based on transparent methodology and robust evidence, will also assist the decision-makers.

The use of a clear definition, the continuing development of guidance, such as the CEA analytical framework, and the publication of case studies of best practice should all help to improve CEA further and take it out of the dark.

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Playing with firewater?

David Cole believes that it is time to close in on pollution containment

What is the most likely cause of environmental damage during a fire at an industrial site? The blaze itself? Air pollution? How about the combusting materials? Surprisingly, perhaps, the answer is none of these but the huge quantities of water that must be discharged at speed to control the flames.

What is more, the water has a habit of finding routes to flow across a site in directions no one ever expected, let alone mapped, before spilling into a river or sewer. A pollution incident such as this can lead to astronomical costs to pay for the clean-up and repairing the environmental damage, and most companies are unlikely to be insured against the losses incurred.

The scale of the problem

To give an idea of the quantities involved, a blaze at a plastics recycling depot in Smethwick in 2013, thought to have been started by a Chinese lantern, needed 14 million litres of water to contain it, equivalent to six Olympic-size swimming pools, according to the West Midlands Fire Service.

The HSE found that pollutants from fuel and firefighting liquids flowed offsite and entered groundwater

After the Buncefield explosion and fire in 2005, the Health and Safety Executive (HSE) found that protective bunding had many flaws that caused large volumes of fuel, foam and fire-fighting water to leave the site. The last line of water pollution defence – so-called tertiary containment – amounted only to the oil depot's surface drainage system, which was not designed to cope with large-scale releases. The HSE reported that pollutants from fuel and firefighting liquids leaked from the bund, flowed offsite and entered the groundwater. In July 2010, five companies were together fined £9.5m for their parts in the disaster.

Feeling lucky?

Of course, most organisations believe catastrophes such as these are unlikely ever to happen. Nevertheless, it is no longer enough to feel lucky

and take a punt that firewater will not escape into watercourses if a huge blaze breaks out. Given the financial and reputational risks, it is clear that taking steps to avoid so serious an incident is commercially advisable. Also, regulatory authorities are now clamping down with big fines and stricter expectations on organisations to provide proof of the measures they have taken to protect themselves and the surrounding environment. A company that cannot show this evidence may be forced down the route of expensive remediation that might otherwise have been avoided.

As government funding is cut, environmental authorities are being forced to relinquish their advisory role and are enforcing regulations through the courts. And fines can be significant, as the Buncefield case illustrated.

Site operators must ensure that any hazardous or polluting substances they use or store do not escape into the environment. Pollution containment is critical for sites operating under the Control of Major Accidents and Hazards (COMAH) 2015 or Environmental Permitting (England and Wales) Regulations (EPR) 2010. It should also be integral to any 14001-certified environmental management systems. COMAH and the EPR are not restricted to the UK; California's Industrial General Permit 2014-0057-DWQ, for example, places the state's industrial sites under similarly stringent environmental regulatory conditions.

In the early stages of fighting a fire, thousands of litres of water are discharged into the environment every minute – overall, 53m litres of 'clean water' were applied to the Buncefield blaze. The surface water run-off will pick up the pollutants and contaminants of whatever burning or hazardous substances are present and, if a site is not fully contained, they will escape into the local environment. Even at sites where the substances stored are not in themselves hazardous, fire-fighting water can still be a concern. Vehicle and loading movements onsite and offsite can also be flashpoints for pollution spills. In recent years there has been a particular focus on incidents at waste handling and recycling sites, one being in January 2014 at a plant in North Yorkshire when 50,000 tonnes of scrap tyres, rubber waste, tyre wire and textile materials caught fire.

There is even the potential worst-case scenario of firewater and heavy rain mixing to overwhelm a containment area.

Source-pathway-receptor model

Source

The cause or source of the pollution – such as combustion emissions, dust, effluent discharges, leaks and spills, dumped or poorly managed waste.

Pathway

The route the source takes to reach a receptor. Pathways include atmosphere, water (rivers, lakes, aquifers, coasts, seas) and land (including surface and underground contamination and groundwater).

Receptor

To cause harm, the source must reach a receptor. These include humans, neighbours, wider population, sensitive individuals/communities, natural and owned resources (including crops and livestock), wildlife (plants and animals), conservation/sensitive species and habitats, and buildings and structures.

Industry guidance

The UK's central industry guidance document for pollution containment was significantly revised in 2014 in the light of lessons learned, particularly from Buncefield. CIRIA 736 *Containment Systems for the Prevention of Pollution* sets out clear guidance on the steps to take.

First, isolation valves should be installed in the outlets to surface water drainage to prevent flood or firewater escaping from the site. It can then be contained until safe removal. In addition, bunds or physical barriers can be constructed, especially around hazardous areas, such as oil or chemical tanks.

This is a good start – as long as the valves are of the correct design. Many sites install a 'penstock valve'. The word penstock represents many types of valves and they do not all have the ability to stop low pressure flows fully; if a site is looking to contain pollution the valve must contain the entire flow. Penstocks are closed by the force of the head of water rising in the drain. So if the pressure is too low, polluted water could still trickle through the opening and into the environment. By contrast, a new valve technology, developed in 2013, provides a watertight, failsafe solution. The technology has been installed at more than 150 sites in the UK.

Hydraulic modelling

With the right containment valves installed that should be job done, should it not? Probably yes, for most small incidents. However, how do you know that in a serious incident, when flood or firewater starts to fill your containment area, it will not overwhelm the surface water drainage, overtop the bunds and flow out of those pathways the site operator did know were there? In its 224 pages, CIRIA C736 recommends that companies begin with a full assessment based on the source-pathway-receptor model (panel, above) to aid a holistic containment strategy.

For many companies, large and small, finding the time and expertise in-house to complete the steps can be a challenge. Hydraulic modelling techniques can be used to map the surface water pathways on and off a site. The beauty is that they can be used to test and prove any valves, bunds or temporary storage measures that are designed to ensure full containment. A solution can then be designed and constructed in the safe knowledge that any potential incident will be fully contained.

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The climate

After the agreement at COP21 in Paris, **Jiggy Lloyd** asks whether the issue of climate change should have been recognised sooner

Slow progress on tackling the drivers of climate change since the Rio summit in 1992 has been discussed at length. But given that the greenhouse effect was first described in 1824, the difficulties of the past 24 years pale into insignificance. Why has it taken just short of 200 years to get to where we are now? And what does this tell us about the development of environmental understanding?

Early believers

Four scientists proposed very early, but largely correct, theories about the greenhouse effect. In France, Jean Baptiste Fourier identified the differential absorption effects of the Earth's atmosphere while developing his *Théorie Analytique de la Chaleur* (the analytical theory of heat), which was published in 1822.

In the 1850s, Irish-born physicist John Tyndall demonstrated in laboratory experiments the validity of Fourier's proposition that constituents of the atmosphere would influence heat absorption. He then went a step further in proposing that changes in the constituents of the atmosphere could have produced past changes in climate. Arvid Högbom was a Swedish geologist who, in 1893, demonstrated that carbon dioxide was emitted to the atmosphere from limestone and that variations in atmospheric concentration of CO₂ were likely in different geological times. His colleague, Svante Arrhenius, proposed that a doubling of carbon dioxide concentration might generate a 5°C–6°C rise in temperature and then, in 1904, suggested that burning fossil fuels might increase the atmospheric concentration of CO₂.

Note the time lapses between these studies and the locations of those involved. Some limited 'networking' did operate: Fourier addressed the Royal Society in London and Tyndall was a member of the X Club, a dining group for professional scientists, but overall there was little overlap in general.

Vegetation removal

There is another explanation for climate change with a long pedigree: the 'vegetation-desiccation' theory.

This is the belief that climate is affected by vegetation removal. Diarist and horticulturalist John Evelyn asserted in 1664 that cutting down trees improved the climate in Ireland. Colonists in North America believed that clearing vegetation improved climate, as did Christopher Columbus in relation to the West Indies. Climatic determinism was a common belief in the Enlightenment and in 1719 Abbe Du Bos proposed that interchange between air and earth dictated climate, and that vegetation clearance in North America would change climate as well as culture.

Over the period that encompassed the work of Fourier, Tyndall, Högbom and Arrhenius, an influential, well-connected but less scientific community in Britain strengthened its belief in the vegetation-desiccation theory. Its members were the geographers, missionaries and natural historians whose observations in overseas territories suggested a past climate less arid than they personally experienced. There was a major debate at the Royal Geographical Society (RGS) in London in 1865, which brought together observations from the Americas, Russia, Greece, Asia Minor, India and North and South Africa in support of the desiccation theory.

The belief that vegetation removal changed the climate had characteristics of a 'convenient truth' in that deforestation could be portrayed as a threat to the economic wellbeing of the empire and its remedy advanced the interests of those involved. For most of the second half of the 19th century, the RGS was at the forefront of lobbying for afforestation in India and elsewhere, using fear of desiccation as key to its argument.

It is worth noting that vegetation and climate change was not just a British preoccupation but that others were more circumspect in their views. Prussian geographer Alexander von Humboldt cited a link during his early career, though by 1850 he used data from America to question whether climate was anything other than stable over man's lifetime. In 1864, the US conservationist George Perkins Marsh said 'felling of the woods... had consequences... probably also to [sic] the



story

local climate'. This more nuanced view of the link between vegetation and climate is of course closer to that held today.

Vegetation removal was not the only factor considered in the quest to explain climate change. It was not uncommon for tectonic upheaval to be cited as the explanation for changing climate in Africa. Missionary David Livingstone was an early exponent of this theory, while botanist John Croumbie Brown cited tectonic upheaval and vegetation removal operating together in his 1877 text, *Forest and Moisture*.

Other scientific minds were preoccupied with volcanoes. A cold winter followed the eruption of the Icelandic volcano, Hekla, in 1783 and the 12 months after Mount Tambora in Indonesia erupted in 1815 was described as the 'year without summer'. It is therefore not surprising that many scientists in the early 19th century were exploring the possibility that volcanic emissions reduced heat penetration to the earth. By the beginning of the 20th century, the theories of US geologist Thomas Chrowder Chamberlin about deep-sea circulation patterns were gaining ground and the sunspot explanation of climate change, first espoused by astronomer William Herschel in the 18th century, was re-emerging.

Beliefs mechanisms

Various explanations for past climate change were reinforced by religious and moral beliefs of the time. In the case of the vegetation-desiccation theory, the British missionary Robert Moffatt linked the worsening condition of the Kalahari Desert with 'man's first disobedience'. Racism made it easy to blame indigenous people for the tree felling, over-grazing or burning that was believed to have changed the climate.

Post-Darwin, belief in catastrophe, such as 'The Great Flood', gave way to uniformitarianism. This was a set of beliefs that highlighted the perpetual and circulatory working of nature. Arrhenius described his own estimates of temperature rise due to man's actions as 'a theoretical possibility' and said any change might be 'for the best'.

More widely, climate trends were interpreted in a culture that had confidence in the 'balance of nature' and the belief that the oceans would regulate any change in the atmosphere. Perhaps most crucially, Arrhenius and his contemporaries did not know how fast the human population was growing, even at that time, and how this would affect consumption and hence emissions. All this might help explain why 50 years went by before Roger

Revelle's hypothesis – that economic growth fuelled by oil and coal was likely to increase CO₂ in the Earth's atmosphere – led him in 1956 to establish the monitoring centre at Mauna Loa on Hawaii. From here emerged the evidence that CO₂ was building up in the atmosphere. In the late 1960s and 1970s, this was matched with past climate data, and converged with the work of Swedish meteorologist Bert Bolin and others highlighting the significance of forest biomass to provide the now-familiar explanation of climate change.

This convergence coincided with the growth of an environmental movement that was beginning to persuade wider society that actions had consequences and that nature was not as perpetual or benevolent as had been believed. In other words, the knowledge that human action was causing the climate to change began to fuse with a wider acceptance that it could.

Learning the lessons

Hindsight is a wonderful thing. What should we learn from the above? Let's not condemn the exponents of the vegetation-desiccation theory; they were early proponents of the importance of forest cover even if somewhat adrift in their appreciation of climate change.

On a practical level, the story of the past 200 years should remind the environment profession to appreciate the datasets and the computational power that underpin the work of the Intergovernmental Panel on Climate Change and others. Without them the consensus shown in Paris in December would have been unachievable. Those who thought volcanoes changed the climate erred in their tendency to scale up short-term observations to create wider explanations; modern science can handle this differently. Vested interests operated and religious or moral norms were influential. Is this any less likely in today's world? Connections were important; it is interesting to speculate how things might have turned out if Fourier had addressed the RGS, for example.

Most of all, the story of the quest to understand climate change is one about belief. Human society is conditioned not just by knowledge but by the interplay of knowledge and belief. This interplay continues to this day – and will be key to success or otherwise in the post-Paris era.

Jiggy Lloyd is an independent environmental consultant and former non-executive director at IEMA; jiggylloyd.co.uk.

The new world order

John Barwise talks to chief executive **Tim Balcon** about how IEMA can help to create a more sustainable future

Tim Balcon is on a mission to transform the world to sustainability and says IEMA is best placed to make this happen. Since joining the organisation three years ago, Balcon has expanded the range of services the institute offers, raised the profile of its members, incorporated the Global Association of Corporate Sustainability Officers (GACSO) into the IEMA family and introduced a governance structure to ensure professional standards support a new framework for sustainability.

To discover what else is in the pipeline, particularly since the Paris climate deal was agreed in December, IEMA member John Barwise interviewed Balcon about the key drivers for sustainability and his 'global ambitions' for IEMA and its membership.

Is the deal reached at the climate talks in Paris (COP21) going to work and how important is it for IEMA members?

It's hugely important. What we have here is an understanding that the science is becoming more credible; it is more plausible and it is becoming mainstream. The size of the challenge is as big today as it was before the Paris agreement. The real turning point is when you have almost 200 countries coming together to agree action – that changes everything.

For IEMA members, and for IEMA, that is a game changer. Our members have the capability to make that change realistic.

The agreement recognises the UN sustainable development goals, going beyond what we might call traditional environmental protection. Do you think there is a wider scope for IEMA members to work in now?

Very much so. We've tried to plug environmental management into the world of business, and there are some inspiring examples of success. But when you look at the impact across the world's economy, we've only scratched the surface.

For environmental management to have that impact, it has to be in the context of the economy and how the world works. We've encapsulated what the UN has been describing as sustainability, and that provides us with a framework on which professional standards can be developed.

This brings us to the acquisition of GACSO by IEMA. It widens the scope of IEMA and perhaps meets one of your key objectives, to ensure

corporate responsibility is a core focus for the institute. What was the purpose behind that, and how is it going to develop in the future?

It was more symbolic than fundamental. IEMA members have been telling us for some time that they're doing much more than environmental management. But there's a real key point here. We have not left environmental management.

What we're doing is protecting and safeguarding environmental management within the language of sustainability. People use the term sustainability very liberally. IEMA doesn't. It's very much about addressing the things in the UN sustainable development goals and, at its core, it's about protecting the environment.

This is linked to this wider professional recognition of IEMA members and Chartered environmentalist status. It has a certain prestige attached to it but, because the Chartered environmentalist has a much wider scope than, say, the work of professional environment managers, assessors, risk managers, auditors and such like, are they losing out by not having their own chartered status?

There are two points you've raised there. It's almost impossible to describe an environment manager as a single entity. So we are broadening our thinking to accommodate the people you've mentioned. In terms of the Chartered mark, this is about achieving a level of expertise that's comparable to accountants and engineers and anybody else who has a more traditional, historical profession.

But I wouldn't want to lose what we have. It is about evolution. We have to cement what is already in the Chartered environmentalist because that's really important in protecting that brand and that value. But at the same time we need to then broaden that out, to look at where chartered would impact on some of the other skills that I've just mentioned.

This brings us on to the range of services the institute offers its members. And some of those early developments are still very much part of the IEMA toolkit, such as ISO 14001. Is this something that the institute will continue to develop as part of its service provision?

The answer is yes. And I think you've described it right. ISO 14001 is a really important tool for our members to use. We know that, because every time we put on a 14001 seminar or webinar they are generally over-subscribed.



There are two things I want to say on this. One is that Martin Baxter, our chief policy advisor, has been travelling around the world to assist in developing the standard. What he will tell you is that the feedback from our members has fundamentally shaped how that will look in the future.

Second, 14001 is a tool, but there are many tools that we are developing within IEMA. Two years ago our members were saying they have the expertise but they wanted to influence decision-making in their organisations to shape how it does its work. So we've developed a whole raft of products and services. Corporates are more engaged now in the activities that we do. Many are developing their capabilities internally to train their staff and their leadership team on environmental management and sustainability. So we have a training programme for that.

We also need to showcase what our members can do so that people recognise who they are and the value they bring to the organisation they work for.

Given an increasingly diverse range of skills that environment managers are expected to have these days, is it possible to keep up that level of training and expertise?

We have more than 80 approved training providers, all giving us feedback on the kind of courses that their customers are asking for. Our role in IEMA is to make sure that the training they are proposing to

Corporates are now engaged more in the activities we do. Many are developing their capabilities internally to train their staff and their leadership team on environmental and sustainability. And IEMA has a training programme for that



deliver is reaching the quality that we would want it to do from an IEMA brand point. And we're getting a lot of training providers with some quite niche training courses now.

We have an additional product for our education providers so that their courses are accredited worldwide. This means they have a much stronger offer to give to students and individuals. So there's a whole range of products and services that we have been developing and will continue to develop.

But we also want to tell the market that this is the curriculum, it's the right training and it's quality-approved training. That means individuals and organisations can be confident that the training they are procuring will do the job they want to do.

You've mentioned already about the level of services that IEMA offers and the wider scope to sustainability. You're saying the goalposts have shifted and IEMA membership is adjusting to the new paradigm. But are you getting the message across to your members, and to others, about the need for societal change to meet the development goals that we talked about earlier?

The question you are asking is a huge challenge, and we're excited by the potential of moving our agenda from the 15,500 members and nearly 200 corporate members we have now to a world stage.

We have new networks developing on health, on climate change, on land quality, on environmental impact. Now there's the challenge that we have with COP21. When you want to transform that intent from Paris into change, then our members are absolutely centre stage in providing that expertise and guidance.

IEMA has the biggest number of competent, qualified, environmental managers and sustainability professionals anywhere in the world. It's up to us to start to own that agenda. So, it's a huge challenge and we are excited by it.

There is a big stage out there for IEMA and its members, given the key issues that we've talked about, such as resource management, the economy and so on. Are we seeing IEMA adjust to taking on board some of these key issues?

Absolutely. Our professional standards team was significantly enhanced in 2015. And what we want is to have a rolling review of what these professional standards should include. So we will consult our members and listen to what they are having to do and what they would like to do. What we really have got now is a real-time feedback mechanism into IEMA. All of that is in the framework of sustainability. That's why the UN sustainable development goals are important. Our Vision for 20:20 [established in 2014] was two years ahead of the game.

Are you clearer about how Vision for 20:20 reflects members' feedback and what they consider to be the important issues?

First, we never stopped listening to our members. We're crystal clear that the vision is something that has excited our members.

It moves them from being the person at the end of a line that an organisation asks for when it gets into a problem with environmental management to changing the way an organisation thinks about the way to do business. What IEMA can do is to give them the badge of recognition that they are part of the new economy. The environmental limits tell us that the economy is going to change. In order for it to change, businesses need expertise. This is the exciting agenda that Paris has thrown on our doorstep. We knew it was happening, our members told us that. So we're clear on what our vision is.

I just want to finish off by returning to my first point. We've seen more than 190 countries signing up to the Paris agreement. We've seen the opportunities that are created for business and the environment and for wider society. Will we see, in 20–30 years, a recognition that the work being done now will make that difference to ensure we have a sustainable future for the next generation?

It's up to us. IEMA members have all the skills and expertise to make the difference. Our membership numbers 15,500 and it's growing by the month. They are people who can influence governments, local authorities, countries, small businesses, large businesses, non-governmental organisations.

HR directors and finance directors, for example, don't necessarily want to be that expert. But they need access to expertise, to understand what's happening so that they can make the changes.

This is why environment and sustainability is such an exciting profession to be in now.

What our members have wanted from the start is to have that influence. Now we have to develop the tools and the expertise to help them so that they can position themselves to make that difference.

So, we're clear on the vision, we're clear on our strategy and we're up for it.

The full interview with Tim Balcon is available to listen to at environmentalistonline.com.

John Barwise, MIEMA, CEnv, is a director at QoL, an environmental management and communications consultancy.

Kirsten McLaughlin

Company environment manager,
WSP|Parsons Brinckerhoff



Why did you become an environment/sustainability professional? Environmental science was still quite a new subject when I started out but I was fascinated by the combination of science, people, places, wildlife and their interaction. I wanted to do my bit to improve the environment we live in.

What was your first environment/sustainability job? A graduate environmental consultant at a small firm in the West Midlands. My boss there had an accountancy background and I learned the importance of presenting the business and cost benefits of environmental improvements to gain their approval.

How did you get your first role? I sent my CV to every environmental consultancy in the area.

How did you progress your environment/sustainability career? I saw an advert for a bursary to complete a masters in environmental management but it meant moving away from friends and family. I took the chance and have not looked back. Towards the end of the course there was an opportunity for an unpaid industrial placement and I got the role. My goal during the placement was to help the organisation develop an environment management system (EMS) and work towards ISO 14001 certification. I was kept on and we achieved certification within ten months. Since then I have worked with a variety of public and private organisations.

What does your current role involve? I look after the EMS and seek to improve our environmental performance on an ongoing basis. This includes updating documentation, conducting audits, investigating incidents or near misses, providing guidance and support to our business disciplines, maintaining our 14001 certification, analysing data, producing environmental reports and liaising with environmental regulators.

How has your role changed over the past few years? I went from working in one organisation, helping them with their environmental management, to working in a consultancy, providing support to a number of companies in a whole range of sectors. I am again in a more corporate role but need to take account of the wider issues of sustainability and climate change.

What's the best part of your work? The variety; every day is different and I get to work with experts in their fields. I also get to see how other organisations work through my client-facing role. My work has given me the opportunity to work in the UK, Europe and Middle East on world-class projects.

What's the hardest part of your job? Getting people to buy into your ideas or suggestions when there may be many other priorities and initiatives going on. The important thing is not to lose faith but to think carefully about how and when to put your ideas forward, tailoring it for the audience.

What was the last development/training course/event you attended? IEMA's webinar on 2016 environmental legislation. I find webinars very useful as you can dial in remotely while still being at work.

What did you bring back to your job? To refresh our internal monthly legal update process and think about how best to communicate legal information.

What is/are the most important skill(s) for your role and why? Good communication skills and the ability to listen. Don't be afraid to ask questions if you don't understand. It helps if you are approachable so that people feel they can come to you if they need help. One of the hardest things to keep on top of is your knowledge and understanding. Environmental management and the legislation around it are constantly changing.

Career file

Qualifications:

BSc, MSc, MIEMA, AMIOA, CEnv

Career history:

2012 to present company environment manager (UK), WSP|Parsons Brinckerhoff
2007 to 2012 senior environmental consultant and EMS manager, Parsons Brinckerhoff
2006 to 2007 environmental specialist, British Standards Institute
2003 to 2004 environmental coordinator, Newcastle International Airport
2001 to 2003 EMS coordinator, Newcastle International Airport
2000 to 2001 environmental officer, Sanofi Aventis Pharmaceuticals
1999 researcher, Centre for Sustainable Development
1998 to 1999 graduate environmental consultant, Galapagos Environmental Management Consultancy

Where do you see the environment/sustainability profession going? I think we will see organisations needing to take a closer look at how the environment will impact their activities rather than just how they impact on the environment.

Where would like to be in five years' time? I want to carry on improving not only our processes for environmental management but also our environmental performance.

What advice would you give to someone entering the profession? You need to have the right attitude to go out and get the role you want, even if you start by volunteering or taking a placement to begin with.

How do you use IEMA's environmental skills map? To identify my professional development status during our appraisal process.

More successful IEMA members

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

Associate

Georgina Allen
Leonard Bejko, Bankers Petroleum
Stephanie Binks, WSP|Parsons Brinckerhoff
Joanne Bowen, Marks & Spencer
Joanna Brenton
Hannah Burke, Argyll Environmental
James Carrick, Buro Happold
Nigel Clamp, Hanson UK
Matthew Coe, MWH Global
Danny Francis Cousins, International Workplace
Lara Cubley, Natural Resources Wales
Lisa Shearer
Linda Dorian, Interserve
Sophie England
Justin Feltham, RSK Environmental

Robert Ford, Airbus Operations UK
Graham Gartland, Airbus Group
Andrew Hamilton, EDP Renewables
Dee Harper
Naomi Harris, Magnox
Ruth Harris, University of Reading
Rebecca Hibbert, Environment Agency
Simon Hughes, RSK Environmental
Emilie Gorse
Michael Image, ADAS Environment
Norbert Klosa
Adam Lawrence, Centro
Paul Madelin, St Nicholas School
Scott Manton, Interfocus
Anthony Moore, Airbus Group
Kelly Murphy, RSK Group
Michelle Nicholls, Northgate
Laura Roddy, Canavan Associates
James Shears, Overbury
Kat Swalwell, Costain

Full and Chartered environmentalist

Ian Allard, The Royal Parks
Philip Bailey, J Murphy and Sons
Laura Bartle, GDF Suez Energy UK
Julie Brooks, Higgins Group
Alison Brough, Willmott Dixon Construction
Mark Burrage, RSK Environmental
Julie Burton, Warwickshire County Council
Manoj Kumar Mani Chaturvedi, Qatar Design Consortium
Faye Clamp, Jacobs Engineering UK
Harry Corrigan, Environment Agency
Daniela Eigner, WSP|Parsons Brinckerhoff
Martin Gettings, Canary Wharf Group
Emma Gillespie, Cavendish Nuclear
Philip Gray, BDP
Poul Wend Hansen, Balfour Beatty Group

Nicholas Johnn, Aardvark EM
Helen Jones, Halcrow Group (CH2M Hill)
Stuart Jones, Eaton
Jane MacDonald, SSE
Peter Morgan, Paignton Zoo Environmental Park
Dominic North, CBI Kentz Joint Venture
Samantha Smith, Skanska UK
Paul Toyne, Balfour Beatty Group
Georgina Venton, WSP|Parsons Brinckerhoff
Caroline Vickers, Samsung C and T

Upgrading your IEMA membership is important in ensuring you gain the professional recognition you deserve, it can help you secure the job you want and achieve a higher salary. To progress your membership visit iema.net or call IEMA on +44 (0)1522 540069 to discuss your options with an adviser.

IEMA events

Date	Region/Time	Topic
17 Mar	South West	Celebrating 10 years: ISO14001 at Paignton Zoo
6 Apr	Wales	Full member and CEnv mentor forum
6 Apr	Wales	Wales network meeting and social
13 May	South West	Bournemouth University: Sustainability in practice
1 Jun	Wales	Full member and CEnv mentor forum
1 Jun	Wales	Wales network meeting and social
Webinars		
15 Mar	12:30 –13:30	ISO 14001:2015 – Lifecycle thinking
12 Apr	12:30 –13:30	The five main changes of 14001:2015 – for environment managers and cross-functional representatives
External events		
15-16 Mar	London	The sustainability summit 2016 econ.st/20Z8qtB
14 Apr	Harrogate	Sustainable best practice exchange – <i>IEMA discount available</i> sbpe.co.uk
19 Apr	Manchester	Delivering the northern powerhouse: smart cities conference – <i>IEMA discount available</i> bit.ly/1MKxyXX
17-18 May	Birmingham	Edie live 2016 – <i>IEMA discount available</i> exhibition.edie.net/

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9

offices where you
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160+

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1/3

of us are Chartered



100%

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and diversity



46

countries providing
extensive opportunities
for you



47

global skills networks to
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of the best ongoing
global projects to work on



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