Counting the cost
The metrics and tools that support carbon footprinting
p21

First-class delivery
Multi-skilled team drives improvement at Royal Mail
p25

A healthy environment
Health and wellbeing comes to impact assessment
p30

the environmentalist

IEMA Transforming the world to sustainability

environmentalistonline.com
August 2016

Goodbye to Europe?

The likely environmental effects

IEMA Transforming the world to sustainability

IEMA 2016 Annual General

Company Name: The Institute of Environmental Management and Assessment **Company Number: 03690916**

NOTICE IS HEREBY GIVEN that the 16th Annual General Meeting of the Institute of Environmental Management and Assessment ("IEMA") will be held at 17:30 on Wednesday 21st September 2016 at the Royal Institute of British Architects, 66 Portland Place, London W1B 1AD.

Ordinary Business:

1. To confirm the Minutes of the previous Meeting which was held on 26th August 2015
2. To confirm recently appointed Non-Executive Directors of IEMA
3. To receive and accept the Directors' Report and Accounts of the Institute for the financial year ending 31st December 2015
4. To re-appoint Streets LLP as Auditors of IEMA until the conclusion of the next general meeting at which accounts are laid
5. To authorise the Board to fix the remuneration of the Auditors

Special Business:

1. To consider a Special Resolution to change the Articles of Association to enable the reappointment of a Non-Executive Director for a third term of 3 years if so proposed by the Board at an Annual General meeting and if approved by Special Resolution at that meeting.

Specifically, that Article 17.3 of the Articles of Association of IEMA shall be amended to read:
"17.3 The Nomination Committee will recommend to the Board, Non-Executive Directors for an initial appointment of a term of 3 years (being the 36 month period commencing with effect from their appointment if appointed at an annual general meeting and if not the conclusion of the first annual general meeting following their appointment) and ending at the conclusion of the third annual general meeting following their appointment."
And that Article 17.4 of the Articles of Association of IEMA shall be amended to read:
"17.4 At the end of the Non-Executive Director's term (as described in article 17.3 above), the Non-Executive Director shall resign save that:

17.4.1. Any Non-Executive Director may seek reappointment to the Board for a second term of 3 years (as described in article 17.3 above), but at the end of any such second term, then subject to article 17.4.2, they shall cease to be eligible for reappointment to the Board for a period of 3 years.
17.4.2. The Board may propose to the annual general meeting at which an existing Non-Executive Director is due to resign following the conclusion of their second term, that, due to particular circumstances as determined by the Board, the relevant Non-Executive Director be reappointed for a third term (as described in article 17.3 above); if such proposal is approved by way of a Special Resolution of the members at such annual general meeting the relevant Non-Executive Director shall be reappointed for a third term of 3 years (as described in article 17.3 above) subject to 17.4.3, but in any event at the end of any such third term, then they shall cease to be eligible for reappointment to the Board for a period of 3 years.
17.4.3 The Board shall regularly review the particular circumstances in which article 17.4.2. has resulted in the reappointment of a Director for a third term of 3 years; if, at any point during the third term, the Board determines that the particular circumstances no longer apply the Board may invoke Clause 18.7 to remove the Director from office."

2. To consider a resolution to reappoint Diana Montgomery as a Non-Executive Director for a third term of 3 years subject to the provisions set out in the revised Articles of Association.

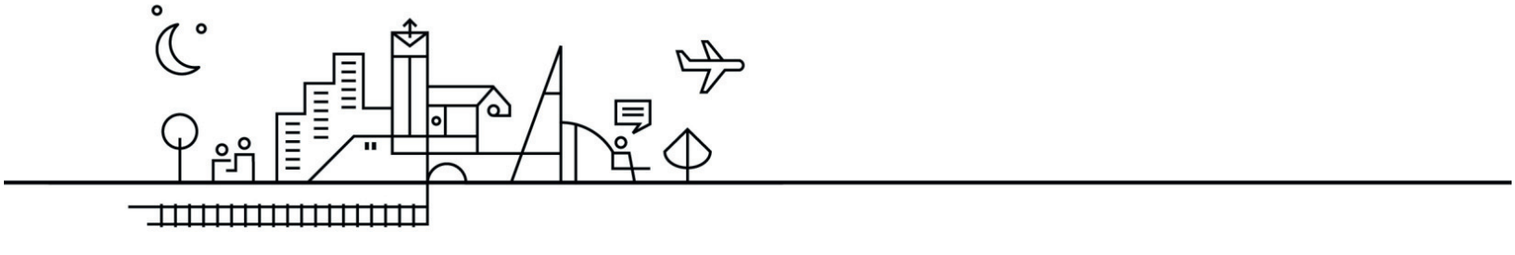
Martin Baxter, Company Secretary,
IEMA, City Office Park, Tritton Road, Lincoln, LN6 7AS, United Kingdom

Notes

Any Member will be entitled to speak on any matters arising out of the Directors' Report and Accounts, but no other business other than that given in the notice will be transacted at the meeting.

Every Member entitled to attend and vote at the meeting is entitled to appoint a proxy or proxies to attend and, on a poll, vote on his/ her behalf. A proxy must be a Member of IEMA. A template form for submitting proxy votes can be found on the IEMA Website www.iema.net/agm2016 and shows all the information that is required by IEMA in this circumstance. Completion and return of a form of proxy will not prevent a Member from attending and voting at the meeting in person should he/ she wish to do so. All proxies so appointed should be notified in writing, by no later than noon on Tuesday 20th September 2016, to the following name and address: Governance Officer, IEMA, City Office Park, Tritton Road, Lincoln, LN6 7AS, United Kingdom.

Go to www.iema.net/agm2016 for all documents and explanatory notes for the AGM.



August

News

IEMA news

EIA news

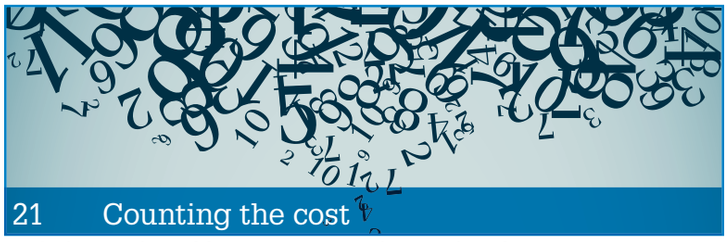
Political insight

Legal brief

IEMA members

Features

After the the vote to leave, Catherine Early and Paul Suff report on the possible implications of Brexit for the environment and sustainability profession



With the number of firms measuring their carbon footprints increasing, John Barwise looks at the motivations and what tools are available to help

Environment and sustainability professionals at Royal Mail Group have come together to drive improvements in performance. Paul Suff reports

Using the latest statistics, this month's datafile shows how the different parts of the UK fared between 2005 and 2014 in reducing their carbon emissions

The revised EIA Directive places more emphasis in environmental impact assessment on health and wellbeing. Howard Waples offers some advice

Looking to the future

More than a month on from the vote in the UK referendum to leave the EU some dust has settled but much has yet to be explained (pp16–20). What will the future hold for environment and sustainability policy and practice? Will the legislation practitioners have come to know so well be repealed? What are the opportunities from Brexit, and who will shape the new policies? What is the worldwide impact?

It is clear that these are questions that concern IEMA members. The webinar that we hosted on the legal implications of Brexit four days after the vote attracted the highest volume of bookings ever. It has also been viewed thousands of times since the first broadcast, so it is obvious to me that getting answers about what happens next is important. That is why we are planning a series of workshops and webinars for members, which will aim to provide some clarity. They will be presented by our chief policy advisor Martin Baxter, who will not only update you on what changes are to come but also on how IEMA and its members will work to help shape the new agenda. Keep a watch out for details of these events, as they will help you stay one step ahead of the changes and about what is planned to help the profession move forward.

The webinar we hosted on the legal implications of Brexit fours days after the referendum vote attracted the highest volume of bookings ever. It has also been viewed thousands of times since the first broadcast

We could tie ourselves up in knots about the impact, but it is important that, as a profession, we collectively pull together and look ahead. We must work to secure the best possible long-term result for environment and sustainability policy and professionals. You can read how IEMA Futures, the next generation of sustainability leaders, feel about the post-Brexit challenges and opportunities on p10. 'A chance to make some noise' is how they put it, with the intention of establishing inspirational and aspirational practice that benefits the environment, businesses, society and the economy. IEMA Futures is an exciting new group so stay tuned over the coming months to learn more about its work.

Looking to the immediate future, I would like to invite you to IEMA's annual general meeting next month. All members are entitled to attend, and I very much hope that you can come along to this year's AGM, in London on 21 September. Full details can be found on the inside front cover of this issue and you can also read the full explanatory notes at iema.net.

Tim Balcon, CEO of IEMA

IEMA is the worldwide alliance of environment and sustainability professionals, working to make our businesses and organisations future-proof. Belonging gives us the knowledge, connections and authority to lead collective change, with IEMA's global sustainability standards as our benchmark. By mobilising our expertise we will continue to challenge norms, drive new kinds of enterprise and make measurable progress towards our bold vision: transforming the world to sustainability.

IEMA
City Office Park, Tritton Road
Lincoln, Lincolnshire
LN6 7AS
tel: +44 (0) 1522 540069
fax: +44 (0) 1522 540090
info@iema.net | iema.net

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

Deputy editor
Catherine Early
catherine.early@lexisnexis.co.uk

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

Sub-editors
Mike McNabb; Angela Partington

Display and recruitment advertising
Harry Toomey
tel: +44 (0) 20 8212 1989
harry.toomey@lexisnexis.co.uk

Dean Chapman
tel: +44 (0) 20 8212 1913
dean.chapman@lexisnexis.co.uk

Marketing campaign manager
Rakhee Patel
rakhee.patel@lexisnexis.co.uk

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

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

Publisher
Chris Jones
chris.jones@lexisnexis.co.uk

IEMA PR and communications manager
Katrina Pierce
k.pierce@iema.net

Advertising, subscription and back-copy enquiries to
Customer services,
tel: +44 (0) 845 370 1234
The 2016 annual rate is £142.

Printing
Headley Brothers Ltd, Ashford, Kent

Published by
LexisNexis, Quadrant House,
The Quadrant,
Sutton, Surrey
SM2 5AS.
lexisnexis.co.uk

ISSN 14727625

FSC www.fsc.org MIX Paper from responsible sources FSC® C011836

the environmentalist is printed by ISO 14001 certified printers on 55% recycled paper stock and despatched in biodegradable polywrap

LexisNexis®

Nature protocol launched

The natural capital protocol could herald a 'new era' for the environment and business, according to commentators.

The protocol aims to standardise how businesses measure and value impacts and dependencies on natural assets, such as freshwater and raw materials. Until now these have mainly been excluded from business decisions or been largely inconsistent, open to interpretation or limited to moral arguments, the protocol's creators said. The new tool will harmonise existing approaches to natural capital and could revolutionise how businesses evaluate their operations, they said.

The protocol has been developed by a coalition of organisations from science, business, finance, reporting, standard setting, government and conservation. More than 450 organisations provided input, and the tool has been piloted by more than 50 firms, including Dow, Shell and Nestlé.

Peter Bakker, president of the World Business Council for Sustainable Development, which led the work, said: 'The days of defining business success by financial metrics alone are over.'

Karen Ellis, chief adviser on economics and development at WWF, which is part of the Natural Capital Coalition, the body behind the protocol, said it would help companies to manage their risks as well as highlight possible new revenue streams.


© Adam Burton/robertharding/ REX/Shutterstock

Robert Spencer, director of sustainability at consultancy AECOM, said that the protocol brought much-needed consistency. However, he warned that success would hinge on the ability of sustainability professionals to integrate it across a business by fostering collaboration between departments. 'Progress is dependent on achieving buy-in from more commercially-focused departments, such as finance and procurement,' he said.

Meanwhile, a report from environmental data analysts Trucost showcases firms that have benefited from measuring natural capital. It considers how they have addressed issues such as the impact of environmental constraints on material price volatility.

Spending on consulting set to rise

Sustainability leaders are forecast to spend less on consulting services over the next five years, but this will be more than offset by expenditure elsewhere.

Independent analyst firm Verdantix has predicted that spending by heads of sustainability on consulting services will shrink globally by 2.4% a year over the next five years, from $417m to $369m.

However, the finance, sourcing and product design functions are forecast to spend more on sustainability projects, resulting in compound annual growth of 4% over the same period. Verdantix said the global sustainability consulting market would grow from $912m to $1.1bn.

Industry analyst Yaowen Ma said the figures indicated that more non-sustainability executives were taking responsibility for the sustainability agenda as the role's importance steadily diminished. 'Over the past 18 months our research has identified a trend towards the head of sustainability role disappearing. Responsibilities are being handed over to the environment, health and safety or to the director of corporate responsibility. The role is slowly becoming redundant as sustainability programmes mature and other function heads take over,' said Ma.

Verdantix said spending on sustainability consultancy services in 2016 across nine major economies would total $912m, with the US accounting for $344m (38%) and Europe for $292m (32%). Elsewhere, Brazil and India will spend $78m and $38m respectively this year.

One quarter of the money ($227m) spent on sustainability consulting this year will fund supply chain initiatives as firms seek to better manage reputational issues, such as those linked with conflict minerals and slavery. Some 23% ($206m) will be spent on support programmes to improve energy management.

Short cuts

Renewing BS 8555

A draft of BS 8555: 2016, an update to the 2003 standard for the phased implementation of an environmental management system (EMS), is available for comment (p15). The UK national standards body, BSI, is revising 8555 in line with the new international EMS standard, ISO 14001: 2015. In addition, the proposed new version omits phase six and its associated guidance in order to simplify 8555 and make it easier for people to use. Martin Baxter, senior policy advisor at IEMA, said the consultation on the draft, which closes on 11 September, gives institute members an opportunity to contribute to the revisions: 'It's important to revise 8555 to ensure it provides support for organisations wanting to implement a performance improvement-based system that meets 14001: 2015. IEMA members have the opportunity to contribute their experience of effective environmental management to ensure the revised standard reflects effective EMS implementation.'

Consumption warning

The amount of primary materials extracted from the earth has tripled in the past four decades, research has found. The International Resource Panel, which is part of UNEP, warned that the high rate of extraction was having a severe impact on human health and quality of life, causing shortages of critical materials and increasing risk of conflict. The amount of primary materials extracted worldwide rose from 22 billion tonnes in 1970 to 70 billion tonnes in 2010, with the richest countries consuming 10 times as many materials on average as the poorest, and twice as much as the world average. If extraction continues to grow at current rates, it will reach 180 billion tonnes by 2050. Global material efficiency has declined since 1990. Because production has shifted from material-efficient economies, such as Japan and Europe, to less efficient ones, such as China and India, the world economy now needs more material per unit of GDP than it did at the turn of the century. Material use must be decoupled from economic growth, the report concluded.

Short cuts

Tax warning for solar

The Solar Trade Association has warned that business rates on commercial rooftop solar installations could rise by between six and eight times from 1 April next year. The trade body said the potential tax hike was due to the re-evaluation of business rates by the Valuation Office Agency. This takes place every five to seven years and looks at how assets are valued, the income they generate and how costs have evolved over that period. According to the STA, the 'rateable value' that will come into force for rooftop solar next year bears little relation to the revenue generated by the installations because costs and subsidies have dropped dramatically. It wants the government to intervene. STA chief executive Paul Barwell said: 'The [revaluation] system needs to recognise that solar is a unique technology with both costs and revenues having come down over the past five years. This has created a complete misfit with the business rates system that needs to be fixed, or else we will face a prohibitive tax hike.'

Reporting gaps found

The world's largest companies are under-reporting sustainability performance, according to research. Just 47% of 4,469 companies listed on world stock exchanges disclosed greenhouse gases (GHGs) data, according to the study commissioned by insurance firm Aviva. The research tracked corporate disclosure on payroll, GHGs, energy, water, waste, injury rate and employee turnover. Each stock exchange was assessed on the percentage of companies whose businesses involve environmentally-friendly activities, technologies and services versus high-carbon emission activities. Euronext Amsterdam was the best-performing exchange on disclosure of sustainability metrics, the study found. The London Stock Exchange was ranked eighth. Meanwhile, the World Business Council for Sustainable Development, the Climate Disclosure Standards Board and Ecodesk have created a free sustainability reporting tool. The Reporting Exchange outlines regulations, policies, practices and standards in different countries.

Firms investing in offsets

A new report has found that companies are engaging in carbon markets as part of larger emissions reduction strategies.

US-based research organisation Ecosystems Marketplace found that 17% of the almost 2,000 companies that publicly disclosed data in 2015 used offsetting as part of a carbon reduction strategy and purchased the equivalent of 39.8 million tonnes of carbon dioxide ($MtCO_2e$) in 2014. Most of the 248 firms that bought offsets did so voluntarily, it said.

Ecosystems Marketplace found that General Motors purchased offsets to cover more than 1.8 $MtCO_2e$ emissions in 2014. Other big spenders were Delta Airlines (995,037), Barclays Africa (880,000), Microsoft (396,531) and Deutsche Bank (325,000). Offsetting was most common in the finance sector, with one company in five voluntarily purchasing offsets in 2014.

Meanwhile, 11 airlines offset their carbon emissions, largely in preparation for industry-wide regulation from the International Civil Aviation Organization, which is likely to be announced in September. According to the report, airlines, including Delta are investing in offsets because there are few other options to reduce unavoidable emissions.

© JTB Photo \ UIG/REX/Shutterstock

Elsewhere, firms are generating offsets in their own supply chains. In total, 79 firms generated 102.4 $MtCO_2e$ in emissions reductions among suppliers in 2014. Cosmetics firm L'Oréal distributed cleaner-burning stoves to women in Burkina Faso who boil the shea nuts used in its products.

Offsetting is often linked to meeting voluntary targets, with 88% of voluntary offset buyers and 92% of compliance buyers set emissions reductions targets. A number of companies had also signed up to the Science Based Targets Initiative. This is a partnership between CDP, UN Global Compact, WRI and WWF to help firms determine by how much they must cut emissions to prevent the worst impacts of climate change.

Scottish renewables at risk

Recent changes in UK government policy have created uncertainty that could threaten the Scottish renewables industry's prospects for further growth, with the early closure of the scheme to support onshore wind likely to cost Scotland up to £3bn in lost investment and put 5,400 jobs at risk.

The warning is from MPs on the Scottish Affairs Committee. In a report, they said the strong recent growth in the Scottish renewables sector, which employs 21,000 people and produces almost 30% of the UK's renewable electricity, was at risk. Changes to subsidies for technologies that generate renewable electricity and uncertainty about future support have affected the confidence of investors in supporting the deployment of new generating capacity.

The committee was particularly troubled about the removal of the Renewables Obligation (RO) for onshore wind, which MPs said had been taken without consulting the industry or Scottish government. 'Early closure of the RO for solar and onshore wind, cutting support through feed-in-tariffs, and delaying the next round of contracts for difference have weakened investor confidence in the renewables sector, and put at risk opportunities for future growth,' said Pete Wishart, SNP MP and committee chair.

The MPs urged the UK government to clarify what future support would be available to the renewables sector, and to set out how it would work with the Scottish government to develop a clear, long-term plan so that renewable energy could remain a central part of the energy mix. Mindful that renewable electricity generated in rural areas and the Scottish islands tends to be costly to transmit to urban centres, the committee called on Ofgem to look into levelling connection costs across the UK.

UK lagging on renewables

The UK is on course to be at least two years late in meeting its target to produce 15% of energy from renewable sources, according to the National Grid.

In its annual *Future Energy Scenarios* report, the power transmission organisation considered the UK's energy trajectory to 2050 under four settings depending on the environmental ambition of policy. Even under the most optimistic one, the UK is likely to meet its target only in 2022, two years later than required under the EU Renewable Energy Directive. The greatest contributor is currently from renewable electricity, which already stands at 25% of all electricity generation. This needs to rise to 34% by 2020, and National Grid is confident this will happen under all scenarios.

But progress in transport is slower, with 14.5 TWh of energy now generated from renewable sources against a 24 TWh needed by 2020. The rate of growth in renewable transport fuel needs to rise from an average of 1 TWh a year on average to 6 TWh, the company estimated. It noted that, although road transport could be electrified at relatively low cost, aviation and shipping present significant challenges. For renewable heat to achieve its contribution to the target, it needed to increase from current levels of 35 TWh to 60 TWh, National Grid said. The technologies were available to meet this level, but the rate of growth had to rise 2.5 TWh on average to 12.5 TWh a year.

© Isopix/REX/Shutterstock

Niall Stuart, chief executive of Scottish Renewables, said ther were many renewable electricity projects that could provide cheap and clean electricity before 2020 and make up the shortfall from heat and transport. He pointed out, however, that onshore wind and solar were ineligible to bid for long-term contracts for power, and that other technologies could not access support until 2021 at the earliest.

Natural capital concept fear

Natural capital must avoid becoming a 'woolly' concept in the way that sustainability has, according to the government's adviser on the issue.

Dieter Helm, chair of the Natural Capital Committee, welcomed the fact that the idea had caught on, but warned that the number of organisations developing their own protocols around natural capital risks the concept becoming meaningless.

'The worry is that there'll be a plethora of different concepts and it could attract same level of the "woolliness" that sustainability has ended up with. We're almost 30 years since Brundtland [definition of sustainability] but if you ask people what it means they're still as clear as mud,' he told *the environmentalist*.

'Lots of things that are highly questionable can be called sustainable. We don't want that to be true of natural capital.' He warned that there was a danger we could end up with a concept that means 'whatever is most helpful and in the interest of certain parties'.

The committee is working on a manual to help organisations develop natural capital plans. A first version should be ready this year. Regarding the natural capital protocol, developed by a group of businesses and campaign groups (see p3), he commented: 'It's not that we don't approve of it, but these things are hard concepts and there's a right way of doing these things and a wrong way of doing them.'

Meanwhile, in July, the Office for National Statistics released estimations on the value of the UK's natural capital. It found that air quality regulation is one of the most economically valuable ecosystem services provided by the nature. More than 220,000 tonnes of PM10 and 3,000 tonnes of sulphur dioxide were absorbed by UK vegetation, mostly by woodland habitats, a service worth around £4.5bn annually, the statisticians said.

Business plans

The Ford Motor Company has teamed up with drinks company **Jose Cuervo** to turn agave plant residue into bioplastic material for use in vehicles. To produce tequila, agave is roasted and ground to extract juices for distillation. Currently the fibre byproduct from this process goes to farms for compost. As part of Jose Cuervo's sustainability plan, the tequila maker is working with Ford to develop a way to use the remnants. Engineers at the US automotive firm are testing bioplastic made from the fibre for use in vehicle interior and exterior components, such as wiring harnesses, HVAC units and storage bins.

Dong Energy's REnescience plant in Northwich, Cheshire is set to be the world's first full-scale bioplant to use enzymes to break down household waste when it starts producing biogas in 2017. The enzymes, produced by Danish biotechnology company **Novozymes**, will be used in the 5MW plant to convert 120,000 tonnes of municipal waste each year.

Nissan has announced that its carbon emissions declined 22.4% between 2005 and 2015. Measures to cut emissions have included installing 19,000 solar panels and ten wind turbines at its Sunderland plant. The power from the panels and turbines account for 7% of the plant's total annual consumption. Meanwhile, the **Renault–Nissan Alliance**, the strategic partnership between the French and Japanese auto producers, has become the 200th corporate member of the World Business Council for Sustainable Development.

The Curve, the online energy management platform, has released what is claimed to be the largest collection of user-generated data of real-time energy projects. The platform collects around 15 data points for each project from companies, such as BAE Systems, BT, Capgemini, Jaguar Land Rover, Toyota and Unilever. Key data points are: site type; technology area (such as lighting, control, wind and transport); amount invested; the payback; project rating; comments; and recommended suppliers. The anonymised information is available through a search capability, allowing users to see aggregated data and individual project data.

Urgent action needed on UK climate risks

The UK is already suffering from the impacts of climate change and urgent action is required to address the risks, according to a report from the Committee on Climate Change on priorities for the next five years.

After three years' research, the independent body's adaptation sub-committee (ASC) concluded that flooding and coastal change, high temperatures and water scarcity were among the most urgent risks facing the UK. It also identified substantial risks to wildlife and natural ecosystems, domestic and international food production and trade, and from new and emerging pests and diseases.

Lord Krebs, chair of the ASC, said: 'The impacts of climate change are becoming ever clearer. Delaying or failing to take appropriate steps will increase the costs and risks for all UK nations arising from the changing climate.'

The ASC report notes that damages from flooding and coastal change are already high in the UK, averaging an estimated £1bn a year. Hotter temperatures will by be accompanied by heavier rainfall, higher river flows and a rise in the sea level, with a corresponding increase in the height of tidal surges, and accelerated erosion along vulnerable coastlines.

It warns that, even with current investment plans, the residual risk of flooding will remain high across the UK. 'Improving protection for some communities will be possible whilst others will face the prospect of significantly increased risks. This will affect property values, business revenues and in extreme cases the viability of communities,' the report states.

Heatwaves, like that in August 2003, when many countries across Europe experienced their highest temperatures on record, are expected to become the norm in summer in the UK by the 2040s. Extreme heat will put more people in the UK at risk of premature death, particularly as the population continues to age. The ASC predicts the number of premature heat-related deaths will more than triple by the 2050s.

© Dinendra Haria/REX/Shutterstock

Responding to the report and risks climate change presents to the UK economy and quality of life, IEMA and the Core Cities group of large regional cities called on the government to invest in preparing the country. Martin Baxter, chief policy advisor at IEMA, said: 'The committee's report reinforces the need for the government to set out the detail to deliver on emissions reduction, and deliver a step-change in adaptation; this is a classic example of where longer-term commitment by the government can make a real difference.

From environmentalistonline.com…

Brexit danger

Well-funded, anti-environment politicians will try to take advantage of the vote to leave the EU to water down environmental protections, according to the chair of the Committee on Climate Change, Lord Deben. The former environment secretary told an Aldersgate Group event that the UK environment movement was in a serious position. 'We shouldn't kid ourselves that there is a very unpleasant group of politicians whose intentions are malign and whose financial backing is very significant indeed. We will be faced with a concerted and very well-funded series of attempts to reduce the protection of the environment and people's workplace rights, and we are going to have to fight that very hard.' He praised former energy and climate secretary Amber Rudd for publishing the fifth carbon budget in spite of the chaos caused by the referendum result, which could have provided an excuse for delay.
bit.ly/29nDnD0

Effective EIA

IEMA has published a guide to ensure environmental impact assessment (EIA) helps deliver effective environmental design and mitigation for projects that have been granted consent. It aims to improve EIA practitioners' understanding of the type and purpose of mechanisms that can be used to mitigate environmental impacts. Josh Fothergill, IEMA's policy and engagement lead, said the guide would help to ensure delivery of the design iterations and mitigation related to environmental effects. The publication is a sister document to the EIA guide launched last November to shaping quality development, which focuses on how EIA is more effective at influencing project design during pre-application talks. It sets out three principles that underpin effective EIA development: collaboration within the project team and externally; presentation of mitigation measures; and effective processes to track mitigation and respond to amendments, post-consent.
bit.ly/29EGx0R

REACH lives

British companies that sell chemicals and products in Europe must continue to comply with EU requirements, the bloc's chemicals regulator has stressed. The European Chemicals Agency (ECHA) released a statement highlighting the uncertainty businesses face over their obligations under the EU chemicals law, REACH, since the referendum. It said compliance with EU chemicals legislation would apply whether the UK remained part of the single market or if it joined the European Economic Area (EEA). The ECHA has appointed Andreas Herdina, head of its communications and outreach directorate, as its contact point for British companies. The agency added that UK chemicals companies would be bound by the next REACH registration deadline for manufacturers or importers in 2018, given that formal Brexit negotiations are expected to last at least two years.
bit.ly/2a5VkFm

Size is everything: proportionate EIA in the spotlight

Scale is important, particularly when it comes to information: provide too little and the recipient is ill-prepared to make the right decisions; provide too much and the impact of instructions gets lost in the detail.

Environmental impact assessment (EIA) is a prime example of how professionals need to balance depth of detail with transparency and clarity to ensure the right outcome. Development decisions rely on access to in-depth and comprehensive detail, prepared by competent experts. However, in recent years EIA environmental statements have become increasingly lengthy and disproportionate to the scale of the project they will influence. This is adding cost and time to projects, and is working against the reputation of EIA as an essential, valuable and effective process.

IEMA's summit on proportionate EIA sought to discuss and debate practice, and identify action to turn back the tide on ever-longer environmental statements. Or, as a tweet from one delegate defined it, 'tame and civilise' the EIA process.

Held at Arup's central London conference suite, the summit attracted EIA professionals from the UK and Ireland, each seizing the opportunity to contribute to a solution.

Opening the event, Stephanie McGibbon, associate director at Arup and an IEMA Fellow, acknowledged the challenge of addressing how disproportionate the EIA process and environmental statements had become, simply because assessments were already regarded as one of the most difficult areas of environmental law. Richard Gwilliam, senior consents officer at National Grid, described some environmental statements as 'obese'. He said the day was an opportunity to achieve a consensus on what proportionate EIA means.

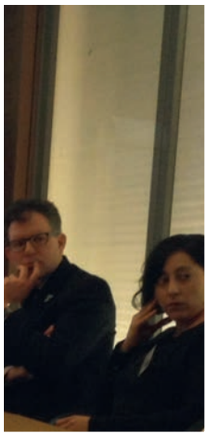
Rufus Howard, director of renewables and marine development at consultancy Royal HaskoningDHV and chair of IEMA's impact assessment network, referenced the institute's 2011 *State of EIA* report as a first step in acknowledging the importance of more proportionate EIA. However, practice had moved on since its publication. He reiterated the value of proportionate EIA, giving examples from his experience.

The morning sessions provided an opportunity for delegates to debate the proportionality of EIA in more detail. The scoping session, chaired by IEMA's EIA lead Josh Fothergill, reached a consensus that, when carried out correctly, impact assessment is a useful and powerful tool, helping to manage risk and support multi-discipline teams working on projects. Nonetheless, delegates acknowledged that EIA had become lengthy and suggested practical ways of streamlining the process. Introducing a mandatory word limit for environmental

statements and learning from practice in countries where EIA is carried out very successfully, such as the Netherlands and Hong Kong, could help professionals in the UK to deliver more proportionate EIA and statements.

The debate continued into the afternoon sessions, with regulatory change, technology, data and innovation and relationships in the EIA value chain discussed. There was a stimulating discussion on how established and emerging technologies could help reduce the length of statements and increasing the value of EIA.

The theme of moving to innovative, interactive EIAs emerged as a point of interest. The suggestion that the profession should abandon static, 'old fashioned' and unsustainable paper environmental statements in favour of multi-media ones that combine photography, audio, video and live charts to convey recommendations received universal support.



The use of drones to photograph coastal erosion and monitor noise, for example, was suggested as a cheap and effective method of gathering the evidence to articulate potential impacts instead of thousands of unnecessary words.

Tom Simpson, team leader at the communities and local government department, and Peter Nesbit, partner and advocate in the planning team at Eversheds, presented on opportunities to drive proportionate EIA through regulatory amendments. They proposed introducing 'authority to act' on proportionate EIA.

The day concluded with delegates backing the view that the best way to make EIA fit for the future and relevant to it would be in applying the right technologies. This would make the EIA process and environmental statements more accessible, effective, relevant, 'alive with meaning' and, most of all, proportionate, they said.

The summit was sponsored by Arup, Jacobs and National Grid. Thanks to Stephanie McGibbon FIEMA, Lisa Ashari GradIEMA, Sophia White GradIEMA and Michael Tomiak for their support in delivering the event.

Personal perspectives

ARUP

"Environmental impact assessments are evolving. Expectations are growing, the breadth of the work is wider and stakeholders are more involved. The case for proportionate EIA has never been higher. But the challenges are significant. Increased complexity threatens practitioners' capacity to translate information into insightful advice that informs a clear understanding of the issues, and that ultimately ensures that the right decisions are taken. As an industry we must respond collaboratively and share ideas to inform best practice. It is why the IEMA summit was critical, and why Arup was delighted to support it. Our own experience, supporting significant projects, such as HS2 and the Thames Tideway Tunnel points to two major opportunities – scoping and communication. Our success in achieving proportionate and robust assessments has come about through internal scoping interviews. Significant effects are thought through early and form the basis for informed discussion with technical stakeholders. This would dramatically reduce the risk of late surprises. Improving efficiency is important but we also need to improve how we communicate information. Can we use technology to bring to life a project before it is built, and while the design is evolving? At Arup, we are using inclusive technology, such as Soundlab, to reduce the risks and uncertainty for all stakeholders. We are heading in the right direction and Arup looks forward to working with the IEMA network to continue meaningful progress towards more proportionate assessments.

Stephanie McGibbon, associate director.

JACOBS

"Proportionate environmental impact assessment is a topic I feel particularly passionate about. Lengthy technical studies and large documents required to report what was already known are often obscuring the focus on the key issues. For practitioners, disproportionate EIA is a common scenario challenging resources and often creates an onerous perception of assessments. Jacobs has long been working on this issue on individual projects. IEMA's proportionate EIA summit was our opportunity to join hands across the profession, step back and help to collectively facilitate fundamental change. I see two keys to success: identify pressures towards disproportionate EIA and find ways to relieve them; and break the "traditions" of EIA practice and reporting, and find new, more effective approaches for proportionate reporting. The summit brought together many in the profession to begin working towards a common goal. We now have to keep that momentum going.

Dan Johnston, senior consultant.

nationalgrid

"As a promoter of major infrastructure projects National Grid is routinely involved in the commissioning, development and management of environmental impact assessments. Like many in the industry, as EIA has matured we have seen a growth in the scale, volume and coverage of our environmental statements. Although this growth has been gradual, recent alterations to infrastructure planning, in particular, have delivered a marked change in the size of our development consent application documents. The consequences of disproportionate EIA are well documented but for us long, verbose and inaccessible statements create a barrier to effective decision-making, not just for the competent authority but also ourselves – for example, in deciding how to most effectively deploy mitigation on our projects to minimise any adverse environmental effects. Sponsoring IEMA's summit demonstrates our commitment to seeking consensus on what makes assessment proportionate and ultimately how it can be used to deliver more sustainable projects.

Richard Gwilliam, senior consents officer.

Brexit: what's next for the UK's young sustainability professionals?

In the debates leading up to the EU referendum, the environment barely featured. Now that the decision has been made to leave the bloc, practitioners involved in IEMA Futures, the body's project to develop understanding of the profession's future needs, strongly believe that the role of young sustainability professionals is more important than ever.

We are experiencing a time of great uncertainty as the UK begins the long, and complex process of reviewing its relationship with the rest of Europe and agreeing a deal on the terms of its departure. However, IEMA Futures does not see this uncertainty as negative when it comes to rallying for the environment. Rather, we believe this is an opportunity to ensure a post-Brexit UK aspires to develop innovative green businesses, generates sustainable growth, and plays a key role in environmental protection and climate change mitigation.

Brexit is not all about the environment, however. The referendum highlighted deep divisions in the country, with many who voted to leave doing so because they felt let down and left behind. As sustainability professionals our voice is also key to ensuring a safer and fairer UK, one in which everyone can achieve and make a positive impact.

As is well known, the EU is responsible for many of the regulations (pp16–20) that help to protect the environment in the UK and it has helped to drive the development of many global agreements on climate change, such as that struck in Paris last year. However, the UK also has its own strong record on environmental protection, having played a key role on this since since joining the European community in 1973. The government's recent decision to adopt the fifth carbon budget, which legally commits the UK to a 57% reduction in carbon emissions on 1990 levels by 2032, shows that, despite the leave vote, the UK is determined to maintain its leading position on climate change.

So, what could the UK lose by leaving the EU in terms of environmental regulation? One of the biggest debates is whether the UK will join the European Economic Area (EEA), which allows for the free movement of capital, goods, services and people, or opt for independent trade deals. Under membership of the EEA most EU laws would continue to apply in the UK. However, the EEA excludes the birds, habitats and bathing water directives and the common agricultural and fisheries policies. This is just one of many areas that practitioners could push to be included in any post-Brexit trade deals.

The vote to leave has left the UK's political landscape arguably on the brink of the biggest period of change in decades, and it is up to the aspiring sustainability leaders of the future to make their voices heard. They need to push for even stronger environmental legislation and shape the sector they are entering. It is a unique opportunity to get a head-start on what can be achieved in their careers.

Those of us involved in IEMA Futures realise that, if we want to make the environment and sustainability a priority, we must do more to engage the public in the debate. The intention of the group is to connect, empower and inform young sustainability professionals. This is our mission because we understand that with togetherness and education come power and influence. We want to transform the world to sustainability, but we cannot do it alone. The more young sustainability professionals that join, the more likely it is that our voices will gain credibility and be heard by the government and policymakers. We have the potential to shape our futures and help to transform the world, and Brexit has given us a window of opportunity to carry our voices even further.

Written by Jack Buckley, Sophie Parsons and Natasha Yorke-Edgell on behalf of the IEMA Futures team. If you would like to find out more about IEMA Futures or get involved, go to the Linkedin group (bit.ly/29P1A1e) and send a message.

ONS accounts for the contribution of the environment to the UK economy

It is easy to lose sight of the progress that is being made to decouple economic growth and impacts on the environment. However, the Office for National Statistics (ONS) recently published the UK Environmental Accounts for 2016 and they paint a picture that shows we are heading in the right direction.

The accounts set out to measure: the contribution of the environment to the economy; the impact of economic activity on the environment; and society's response to environmental issues. Data is available over a number of years for most of these. This is important because annual fluctuations in performance can often reflect changing economic or environmental conditions that can distort long-term trends, such as recessions and warm weather, which can affect energy consumption.

The key points are:

- energy intensity fell 40% between 1997 and 2014;
- total energy consumption was 9% lower in 2014 than in 1990, having peaked in 2005;
- fuel use decreased by 16.6% between 1990 and 2014, falling from 213.6 million tonnes of oil equivalent (Mtoe) to 178.1 Mtoe;
- resources consumed per person fell 30% between 2000 and 2014;
- UK GHG emissions were 35% below 1990 levels in 2014, and provisional figures show emissions fell a further 3% in 2015 (see also pp28–29);
- resource productivity (the total amount of materials used by the economy in relation to economic activity) increased by 65.9% between 2000 and 2014;
- there were reductions between 1990 and 2014 in acid rain precurers (72%) and emissions of lead (98%);
- UK government spending on environmental protection between 1997 and 2014 increased from £4.1bn to £15.4bn or 1.9% of total government expenditure; and
- low-carbon and renewable energy activities generated a turnover of more than £46bn and employed 238,500 FTE in 2014.

The report also includes a section on natural capital accounting, including carbon stock accounts, which highlight the importance of soil as a bio-carbon stock. Based on an evaluation of the value of ecosystem services as a whole, the overall asset value of UK woodland was £168bn in 2014, with the recognition that 'the value of a tree left standing provides up to 30 times more in other services than it would provide if cut down for timber'.

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

Coal mine gets green light


© Design Pics Inc/REX/Shutterstock

Northumberland County Council has approved plans for a surface mine near Druridge Bay.

Banks Mining wants to extract around three million tonnes of coal, sandstone and fireclay over five years from the opencast mine, on the coast between Widdrington and Druridge Bay. Plans include restoring the site when mining ends. Councillors said they were 'minded to approve' the application. Their decision will now be passed to the secretary of state for consideration. If the application is approved, mining will begin next year.

The planning application and environmental statement for the mine states that the development can be undertaken 'without significant negative effects on designated conservation areas or protected species' and that planned 'restoration will provide significant biodiversity benefits linked to the wider management of Druridge Bay'. However, local campaigners say the site will increase noise, pollution, light and dust, and have a negative impact on wildlife. They also point out that coal extraction is contrary to plans by the government to end unabated coal-fired power generation in the UK by 2025.

After the council's decision, Green MP Caroline Lucas called for planning rules to be brought into line with the policy to phase out coal power stations. 'Coal is a dirty, polluting energy source and has no role to play in a modern, zero-carbon economy. We need to keep coal where it belongs: in the ground,' she said. Council leader Grant Davey said, although he appreciated it was a controversial issue, the mine would bring jobs to the area and boost economic growth in the county.

Rufus Howard: planning the future after Brexit

The study of the future, through foresight studies or horizon scanning, for example, involves examining historic trends and data to produce forecasts and projections. Both the public and private sectors use such data for strategic planning, research, policy development and long-term planning.

Take the Future Energy Scenarios from the National Grid (p6), which show how the energy landscape may look in 2050. Industry and the government will use the different scenarios to develop plans and policies. What does this have to do with environmental impact assessment? Quite a lot. EIA itself is a form of foresight study: practitioners study historic data, predict scenarios of what might happen if a particular development is built, and recommend interventions – either design changes or mitigation measures.

The uncertainty around Brexit (pp16–20) and the future of environmental regulations requires EIA practitioners to use horizon scanning to identify potential scenarios on behalf of clients. What will happen with the implementation of the new EIA Directive? Will the existing laws be repealed, re-written or removed entirely? These are all different scenarios. Practitioners have the option to develop contingency plans to adapt to whatever the future brings or they can work actively to encourage particular scenarios to become reality.

The future is uncertain, but not fixed. We can influence the direction of the future by applying mitigation measures to increase the likelihood of a favourable outcome. We are used to doing this at the project level in EIA; now we need to take the same approach to developing design modifications to environmental and planning policy in the UK to ensure the eventual scenario does not result in a significant adverse impact on society and the environment.

EIA research

EIA in the UK since 1999

A review of EIA in the UK over the past 15 years by academics at the Environmental Assessment and Management Research Centre, at Liverpool University's School of Environmental Sciences has found the internal strengths and weaknesses of the system have remained largely unchanged. Urmila Jha-Thakur and Thomas Fischer followed the approach used by a study in 1999 looking at the first ten years of EIA in the UK. They complemented this with a SWOT analysis, which involved: data from a 2011 survey of EIA in the UK; a workshop on the EU EIA Directive; and a literature review of publications since 1999. Their paper is published in *Environmental Impact Assessment Review*.
bit.ly/2ab2jiw

New approach to LCA

The requirement for expert knowledge in environmental science and the resources needed to collect data often make it difficult to carry out lifecycle assessment (LCA) to quantify a product's environmental impact. To overcome this, a researcher at the Hong Kong University of Science and Technology has developed an evidential reasoning-based approach to help non-LCA experts perform design alternative evaluations. In a paper in *Environmental Impact Assessment Review*, CY Ng says the proposed approach would enable decision makers to quantitatively assess the lifecycle phases and design alternatives by comparing potential environmental impacts.
bit.ly/29TSR3b

Assessing shale gas projects

A paper in *Impact Assessment and Project Appraisal* argues that effectively managing the social and environmental risks of unconventional shale gas development requires a new generation of impact assessment. It says assessment should unite the ideals of strategic environmental assessment and cumulative effects assessment with deliberative and inclusive processes of community engagement towards collective risk management.
bit.ly/29UL2nQ

Decc abolished and all change at Defra

In the political turmoil that engulfed the UK after the vote to leave the EU, Decc merged with the business department to form the Department for Business, Energy & Industrial Strategy (BEIS) and prominent Leave campaigner Andrea Leadsom took over at Defra.

The changes were unveiled by prime minister Theresa May. The decision to merge Decc and BIS and exclude climate change from the new department's title was criticised. The first energy and climate change secretary, former Labour leader Ed Miliband, tweeted: 'Climate not even mentioned in new department title. Matters because departments shape priorities, shape outcomes.'

James Thornton, chief executive at environmental law group ClientEarth, said: 'At a time when the challenge of climate change becomes ever more pressing, the government has scrapped the department devoted to tackling it. It sends a terrible signal at the worst possible time, undermining efforts to secure a clean, safe energy future.'

However, BEIS secretary Greg Clark, MP for Tunbridge Wells since 2005 (pictured, right), claimed the merger would help deliver affordable, clean energy and tackle climate change. A statement from the department stressed that climate change would be key focus: 'This merger will enable a whole economy approach to delivering our climate change ambitions, effectively balancing the priorities of growth and carbon reduction.' It added that reducing carbon emissions without jeopardising economic growth would be a principal challenge.


© REX/Shutterstock


© Tolga Akmen/LNP/REX/Shutterstock

Lord Deben, chair of the independent Committee on Climate Change, welcomed the creation of BEIS. He said it would ensure the UK exploited its strengths in low-carbon industries and delivered the carbon budgets. He called on Clark to produce strategies that incorporated tackling climate change as a key driver of future business success. 'The new department should be well placed to ensure the UK's strong research base in climate change and technology supports that vision alongside domestic and international progress to tackle climate change,' Deben said.

MPs Margot James, Jo Johnson, Nick Hurd and Jesse Norman, as well as Baroness Neville-Rolfe, support Clark at BEIS.

At Defra, Brexiteer Leadsom, MP for South Northamptonshire since 2010 (pictured, left), replaced Liz Truss, who has become justice secretary. Between May 2015 and July 2016, Leadsom was an energy minister at Decc. In addition to having overall responsibility for Defra, Leadsom's specific responsibilities include EU and international relations.

Her team comprises George Eustice, who remains parliamentary under-secretary of state for farming, food and the marine environment, Thérèse Coffey and Lord Gardiner.

Separate collections of food waste could fuel homes and offices

A report from the Renewable Energy Association (REA) on the economic benefits of separate biowaste collections reveals that almost all of the two million tonnes of food waste from UK commercial producers each year is either incinerated or sent to landfill. Most is irretrievably mixed up with other waste before disposal, requiring it to be separated. Collecting it separately would save companies money in pay-by-weight costs of disposal and increase the efficiency of dry waste recycling. Local councils could also make financial savings if they operated separate domestic food waste collections. Only half currently do so.

This is interesting from a waste collection point of view, but why did the REA publish the report? What does it have to do with renewable energy? The answer is anaerobic digestion (AD).

Recently I visited an AD plant in south London and saw first hand what it was doing with food waste, most of which had been collected from businesses that were willing to separate it from other wastes. On the one site, the AD company receives and refines the collected waste, puts it in huge digester domes, and produces biomethane and a high-quality digestate for use as organic fertiliser. Some of the biogas is used to produce electricity, most of which powers the facility; the rest is cleaned up and injected straight into the gas mains. There are about 50 AD plants in the UK working along the same lines as the one in south London.

Biomethane and other green gases can help lower the carbon content of the gas we use, and in the end can tackle the big conundrum of decarbonisation: what to do about the 47% of energy that heats homes and offices.

But there is one problem. Even the relatively low number of AD plants operating cannot get enough food waste to fuel their operations. The plant in south London is running at about 50% capacity, and it could double its present size and run at full capacity if supplies were forthcoming. There are three such digesters operating around London, but there would easily be room for about ten if supplies were more reliable and organised.

A small amendment to regulations about separating food waste could have huge implications for the availability of ideal feedstock for AD and green gas.

Alan Whitehead, MP for Southampton Test.

In court

Firms fined £933,000 between them for polluting brook

Bolton Crown Court has fined United Utilities £600,000 and its contractor, KMI+, £333,000 for polluting a brook with sodium hypochlorite, killing almost all aquatic organisms.

The court was told that KMI+, a joint venture between four companies – Kier Infrastructure and Overseas, J Murphy & Sons, Interserve and Mouchel – was contracted to carry out improvements at Wayoh water treatment works at Turton Bottoms, north of Bolton. On 4 December 2013, the contractors removed and emptied a tank used to store sodium hypochlorite in 10% solution.

Richard Bradley, prosecuting for the Environment Agency, said that instead of pumping or siphoning the 300 litres of remaining liquid out of the vessel, water from a hosepipe was fed into the tank to dilute the sodium hypochlorite before it was allowed to overflow into a bunded area, which was left unsupervised for more than 15 hours.

Bradley said the contractors and United Utilities had assumed the liquid would flow through drainage pipes to another tank, but they did not carry out a risk assessment and neither company had surveyed the drainage system. Some of the pipework was broken, leading to the solution spilling into Bradshaw Brook. 'Although it was diluted, once in the watercourse it was highly toxic,' he said.

Sodium hypochlorite is used in water purification and is also the principal ingredient of household bleach. It is very corrosive and highly toxic to aquatic organisms. On 4 December, a member of the public contacted the agency after spotting dead fish. Agency officers found that a 1.7 km stretch of the brook leading towards Jumbles Reservoir was so badly polluted nearly all aquatic life was killed, including fish, shrimp and earthworms. Up to 900 dead fish were recovered, including brown trout, loaches and bullheads, but the agency said the number killed was likely to have been much greater. In June 2014, United Utilities paid for the brook to be restocked with native fish from the downstream section.

The Honorary Recorder of Bolton, Judge Timothy Clayson, said the incident had arisen through senior management failings to ensure a proper system and procedures were in place. Gordon Whitaker, environment manager at the agency, described it as avoidable and blamed negligence by both parties.

United Utilities referred to the incident in its 2014 corporate responsibility report: 'We take this kind of incident very seriously and we have undertaken improvements both at the site concerned and other sites across the business to ensure we prevent this type of incident again.'

United Utilities and KMI+, which both pleaded guilty, were also ordered by the court to pay costs of £19,090 and £26,712 respectively.

Jail term for WEEE fraud

A waste operator has been jailed for seven years and six months for defrauding the electrical waste recycling industry out of £2.2m. It is a record custodial sentence for an environmental crime.

Leeds Crown Court was told that Terence Dugbo had falsified paperwork to claim that his Leeds-based firm, TLC Recycling, had collected and recycled more than 19,500 tonnes of household electrical waste during 2011 in order to receive payments from government-backed producer compliance schemes. However, documents seized from the firm revealed that money was being claimed for waste collections from fictitious streets and properties; that vehicles used to transfer waste were recorded as being in Northern Ireland, England and Scotland on the same day, while others did not exist; that waste was collected by vehicles that could not carry the weight specified; and that the weights of some items said to have been collected were exaggerated.

The court was told that Dugbo had previous convictions for fraud and illegally exporting banned hazardous waste to Nigeria. Judge Clarke agreed to the Environment Agency's request to begin a proceeds of crime case against Dugbo for £2.2m.

Case law

Assessing the openness of the green belt

The Court of Appeal decision in *Turner v Secretary of State for Communities and Local Government* shows that the concept of 'openness of the green belt' is not narrowly limited to an approach based on a measurement of volume.

Paragraph 89 of the National Planning Policy Framework (NPPF) offers exceptions to the general rule that inappropriate development is harmful to the green belt. One is: 'Limited infilling or the partial or complete redevelopment of previously developed sites (brownfield land), whether redundant or in continuing use … which would not have a greater impact on the openness of the green belt and the purpose of including land within it than the existing development.'

Turner had applied for planning permission to redevelop green belt land to replace a mobile home and storage yard. Since the volume of the proposed development was less than that of the old development, Turner argued that the scheme would not have a greater impact on the openness of the green belt.

The court said the concept of 'openness of the green belt' was not limited to the volumetric approach; the word 'openness' was open-textured and many factors were capable of being relevant. Factors relevant to how built up the green belt was and would be if redeveloped were by no means the only ones. The inspector's assessment of impact on the openness of the green belt had been a matter of evaluative assessment in the context of making a planning judgment. He had been entitled to take into account the difference in the visual intrusion on the openness of the green belt.

Jen Hawkins

Lexis®PSL

New regulations

Waterman

In force	Subject	Details
30 May 2016 	Permitting	European Commission Decision (EU) 2016/902 establishes best available techniques (BAT) for common wastewater and waste gas treatment and management systems serving permitted installations in the chemical sector. Authorities in each member state are required to update permit conditions affected by 2016/902 by 30 May 2020. bit.ly/1XbwJl4
7 Jun 2016 	Emissions	European Commission Decision 2016/775 sets the benchmark to be used to allocate free allowances to aircraft operators under the EU emissions trading system. bit.ly/1OfZKcO
7 Jun 2016 	Environment protection	EU Directive 2016/774 amends exemptions under the End-of-Life Vehicles Directive 2000/53/EC on the use of lead, mercury, cadmium or hexavalent chromium (chrome VI) in materials and components in vehicles. bit.ly/1sv9d5E
10 Jun 2016 	Environment protection	The Sulphur Content of Certain Liquid Fuels Directive (EU) 2016/802 replaces Directive 1999/32/EC and three amendments by consolidating them. bit.ly/25OWVHp
11 Jun 2016 	Climate change	European Commission Decision (EU) 2016/915 commits the EU (within the International Civil Aviation Organization) to lead the introduction a single measure for the trading of international aviation emissions by 2020. bit.ly/29F9YWF
17 Jun 2016 	Energy	The Building Regulations &c. (Amendment) (Wales) Regulations 2016 remove the requirement for energy performance certificates (EPCs) for new and converted buildings under the Building Regulations 2010 and the Building (Approved Inspectors etc.) Regulations 2010. This is because the requirement has been transferred to the Energy Performance of Buildings (England and Wales) Regulations 2012 through a 2016 amendment. bit.ly/29RWXFM
20 Jun 2016 	Water	The Groundwater (Amendment) Regulations (Northern Ireland) 2016 amend the 2009 regulations by transposing the provisions of Directive 2014/80/EU, which amends annex II to Directive 2006/118/EC on the protection of groundwater against pollution and deterioration. These regulations amend the 'lead' parameter threshold to bring it in line with the drinking standard set in Directive 98/83/EC on the quality of water intended for human consumption. The review of authorisations should now be periodical. bit.ly/1ppez1n
20 Jun 2016 	Environment protection	The Bathing Water (Amendment) (England) Regulations 2016 update the list of designated bathing waters in England. bit.ly/29JDTeo
21 Jun 2016  	Energy	The Energy Efficiency (Private Rented Property) (England and Wales) (Amendment) Regulations 2016 provide additional time for landlords to register exemptions from the minimum energy performance standard duty. The deadlines are now 1 April 2017 (for non-domestic properties) and 1 October 2017 (for domestic properties). bit.ly/28Ss6rY
27 Jun 2016  	Water	The Water Supply (Water Quality) Regulations 2016 consolidate legislation on the quality of water supplies for human consumption in England. They also apply to supplies in Wales if the water undertaker or licensee is based primarily in England. The regulations add an analytical parameter (radon) for monitoring and update sampling frequencies for tritium and indicative dose (ID). Monitoring for tritium, radon and ID may be omitted on the basis of a risk assessment. The Private Water Supplies (England) Regulations 2016 consolidate legislation on private water supplies in England. The regulations update monitoring requirements for radioactive substances to include radon. bit.ly/29ySUML; bit.ly/29AvRRc

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

Latest consultations

6 Sept 2016
Regulating offshore activities

Before being wound up and absorbed into the Department for Business, Energy & Industrial Strategy (p12), Decc issued a consultation on proposed changes to regulations to recover costs of services under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (OPPC) and the Offshore Chemicals Regulations 2002 (OCR). On 22 July 2015, Decc introduced secondary legislation incorporating a new method of charging based on an hourly rate system. The department has discovered that it had not been recovering the cost of some services under the OPPC and OCR and is proposing changes to enable it to do so.
bit.ly/29BMcYt

9 Sept 2016
LIFE programme

The European Commission is carrying out an evaluation of the LIFE programme for the environment and climate action. It proposes to take a decision on the renewal, modification or suspension of the measures, as well as taking into account evaluation results on the long-term impact of LIFE+. The commission is seeking the views of stakeholders through a questionnaire, focused on the programme's relevance, effectiveness, efficiency and added value across the EU.
bit.ly/28IplwH

11 Sept 2016
BS 8555

BSI, the UK's national standards body, has published a draft of its revised environmental management systems (EMS) standard, BS 8555, for comment (see also p3). The proposed changes are to align it with 14001: 2015. 8555 provides guidance for all organisations, particularly small and medium-sized enterprises (SMEs), on the phased development, implementation, maintenance and improvement of an EMS.
bit.ly/29OlsTI

29 Sept 2016
End-of-life vehicles

The European Commission is consulting on potential measures to improve the implementation of aspects of the Directive on End-of Life Vehicles (ELVs; 2000/53/EC). The consultation is focused on six areas: intra-EU trade – keeping track of vehicles within the EU; extra-EU trade – methods to achieve more complete reporting on extra-EU export and ways to distinguish between exporting ELVs and used vehicles; enforcement techniques – to reduce illegal dismantling of ELVs at dealers and repair shops, and actions to improve ATF compliance; public awareness and incentives – for ELV tracking and environmental risks; data quality – aspects to improve coverage and data quality when reporting on ELVs (possible revision of commission decision 2005/293/EC); and persistent organic pollutants and ELVs.
bit.ly/294bA8r

3 Oct 2016
Historic environment

A plan by the Welsh government to introduce the country's first technical advice note (TAN) on the historic environment has been published for consultation. The proposed TAN would: provide detailed planning guidance to fully reflect objectives for a well-protected and accessible historic environment; and meet the needs of a modern and accountable system for considering how changes affecting the historic environment are managed through the planning system.
bit.ly/29xA2mv

New guidance

Capital allowances	Defra has updated both the water product and criteria lists (bit.ly/29GmS5u and bit.ly/29HOnrq) of technologies available under the enhanced capital allowance scheme. The scheme provides a 100% first-year allowance for specified water-efficient technologies.
MCERTS	The Environment Agency has updated several guidance documents relating to the monitoring of emissions to air, land and water (MCERTS). The revised *Performance Standards for Continuous Ambient Air Quality Monitoring Systems* (version 10) aligns with EN 14662-3: 2015, the standard method for the measurement of benzene concentrations (bit.ly/29HPpDO). Changes to *Performance Standards and Test Procedures for Continuous Emission Monitoring Systems* (version 3.5) include: adding references to EN 16911-2, EN 15859 and the Industrial Emissions Directive (IED), as well as references to EN 14181 and EN ISO 16911-2 regarding the validity of certificates; an updated table of normative references to include updated standards, the addition of EN ISO 16911-2 and the removal of EN 15256; and revised references to the new directives for electromagnetic compatibility and low voltages (bit.ly/2a1uyhT). Version 7 of technical guidance note M4 – guidelines for ash sampling and analysis – removes references to hazardous waste assessment and landfill waste acceptance criteria. It also updates hyperlinks and legislative references to include the IED and revised regulations on animal by-products (bit.ly/29PawUF).
WEEE	The registers of electrical and electronic equipment (EEE) producers, approved exporters, approved authorised treatment facilities and producer compliance schemes have been revised by the Environment Agency. The updated documents are: 2016 EEE producers' public register (bit.ly/29SFiiU); approved exporter public register (bit.ly/2a5qJXq); approved authorised treatment facility public register (bit.ly/2a4kJ4l); and waste electrical and electronic equipment producer compliance schemes public register (bit.ly/29HVjVQ).

Uncertainty rules the

Catherine Early and **Paul Suff** report on the possible implications of Brexit for the environment and sustainability profession

IEMA chief policy advisor Martin Baxter summed up the mood after the vote to leave the EU: 'Environment and sustainability professionals will now look to the future with a sense of uncertainty.'

This perception is founded on the fact that more than 80% of UK environment law derives from Brussels and the UK's climate and environmental protection ambitions are intrinsically linked to Europe. Ahead of the referendum, IEMA members offered their views on UK membership and the environment. Fully 81% believed European laws and regulations had been important in providing them with a framework to deliver environmental protection and environmental improvements, while 82% believed that being part of the bloc had given the UK more international clout and greater global influence on environmental outcomes.

So, what is the electorate's decision to leave likely to mean for environment and sustainability?

Carbon and climate

Brexit supporters include several notable climate change sceptics. These include the chair of the Leave campaign, Nigel Lawson, who also chairs the Global Warming Policy Foundation (GWPF), leaving some to fear that the Climate Change Act will be under threat once the UK has disengaged. The GWPF has already tried to undermine the act, claiming approval of the fifth carbon budget should have been delayed and was potentially unlawful because it assumes that the UK will still be part of the EU and active in the bloc's emissions trading system (ETS).

However, Lord Deben, chair of the Committee on Climate Change, an independent advisory body, told a meeting hosted by the Aldersgate Group that he believed the act was safe because there was not enough support among MPs to repeal it. Amber Rudd, when energy and climate change secretary, also felt that repeal was unlikely. 'The act was not imposed on us by the EU,' she said after the referendum. 'It was delivered with cross-party support by the UK Parliament. Leading Leave campaigners made clear they remain committed to it.'

Richard Black, director at the Energy and Climate Intelligence Unit (ECIU), agrees that the act is unlikely to face a 'full-frontal' assault, but warns that, without an effective strategy and investment, its goals may be missed.

Deben's group published its annual progress report on the UK's emissions reductions just after the referendum result was announced. It concluded that the UK may need to use other methods for future emissions cuts, but that it was too early to say what these would be and that it would report back later this year.

Achieving the UK's carbon budgets is dependent on participation in the ETS. According to a briefing from law firm Norton Rose Fulbright, if the UK becomes part of the European Economic Area (EEA) and European Free Trade Association (EFTA), then, like Norway, Liechtenstein and Iceland, UK industry would still participate in the EU cap and trade scheme. If the UK did not participate in the ETS, transitional and linking arrangements would be required. These would be particularly important for companies that hold a surplus of allowances.

Silke Goldberg, a partner at legal firm Herbert Smith Freehills, says changes to the system would be triggered

waves

by the UK exiting the ETS because the UK's pro rata share would be removed from the overall cap. 'The UK is the second largest emitter of GHGs in the EU and its utilities are among the largest buyers of ETS allowances, so the UK leaving could be a defining moment for the system,' she says. Goldberg also points out that work on reforming the system is under way (headed in the European Parliament by Conservative MEP Ian Duncan) and that the UK would lose its voice in these negotiations when it leaves.

Before the vote, the International Emissions Trading Association (IETA) warned: 'Not only would a Brexit vote undermine [reform] efforts, it would also make reforms more difficult, given the added complexity of how to restructure the UK's involvement in Europe's carbon market – which is significant given the UK's current commercial role.'

In the immediate wake of the vote to leave, the cost of ETS allowances plunged more than 12% to €4.96 and, five weeks later, as *the environmentalist* went to press, had dropped further, to €4.56.

In terms of the Paris agreement, the UK is a signatory and would have to ratify it. The only difference, says Jonathan Gaventa, director at consultancy E3G, is that, whereas previously the UK submitted a joint Intended Nationally Determined Contribution (INDC) together with other EU member states, after leaving it would have to submit its own and the EU re-submit its INDC in light of this. In a House of Commons debate on the implications of Brexit for environment and energy policy on 12 July, Rudd said the government was pushing the EU for early ratification of the Paris treaty.

Brexit may also weaken the bloc's climate ambitions. The UK has pushed the EU to commit to a 50% reduction in GHGs by 2030 compared with 1990 levels, as opposed to the current 40%. In March, Bulgaria, Czech Republic, Hungary, Italy, and Latvia all rejected a call for deeper cuts.

Energy and power generation

E3G says the market and political uncertainty since the vote will 'shape UK and EU energy for years to come'. Black at the ECIU predicts an increase in energy prices because about 45% of the coal, gas and oil the UK consumes is imported, and a falling pound would make them more expensive. 'It won't be a sudden impact, as companies regularly make deals months and years ahead. But it's there all the same.'

The UK's energy infrastructure requires upgrading and a question now hangs over whether investors will commit the resources to fund this. Shadow energy secretary Barry Gardiner made this point in the House of Commons on 12 July. 'There is a need for £100bn of investment by 2020 to make the UK's energy infrastructure "fit for purpose". Any hiatus in project development threatens the UK's ability to meet its energy and climate security targets,' he warned.

Goldberg says: 'Brexit may make investment more costly. Economic commentators have suggested that this may well be the largest risk facing the energy sector as a result of the vote to leave the EU.'

Government cuts to subsidies for renewable energy projects had already made investors wary. The latest E&Y renewable energy country attractiveness index, published in May, placed the UK 13th, down from eighth in 2015. The uncertainty of Brexit is likely to make investors even more cautious. Dr Nina Skorupska, chief executive at the Renewable Energy Association, says the referendum result raises serious questions for investor certainty, energy security and much-needed investment in the UK's energy infrastructure. Already, German industrial giant Siemens has said the vote had put in jeopardy plans to export wind turbines from its factory in Hull. Jürgen Maier, the firm's UK chief executive officer, told *The Guardian*: 'Those plans were only beginning to happen and I expect that they will stall until we can work out exactly what the [government's] plan is, how we can participate in EU research programmes, and until all the issues around tariffs and trade have been sorted out.' However, the company subsequently said it would continue to invest in the UK.

Goldberg warns that Brexit may cut off UK access to European Investment Bank (EIB) loans. Bloomberg warned in February that a vote to leave would put at risk

investment in renewables and energy efficiency. Since 2007, it said the EIB had invested €7.2bn in renewable energy projects, with the UK the biggest beneficiary, accounting for 24%. Whether the UK would continue to receive EIB money is unclear, but the non-EU countries had received only 12% of the funds disbursed by the bank since 2007. Rudd told MPs on 12 July that she hoped the EIB would continue to fund projects in the UK.

The UK has a number of energy-related, EU-imposed targets to meet by 2020, including generating 15% of its energy from renewable sources and saving 20% of the energy it uses. These targets may need to be reviewed, modified and possibly even repealed, which could present a further challenge for a sector that already has to cope with substantial subsidy reductions, says Alan John, partner at legal firm Osborne and Clark. Parliamentary under secretary for climate change Nick Bourne told the House of Commons Energy and Climate Change Committee in July that the 2020 renewables target would remain relevant and binding until it was clear how Brexit would be achieved.

EU legislation on improving the energy efficiency of buildings – the energy performance of buildings and the energy efficiency directives – has been transposed into national regulations. These include the Energy Savings Opportunity Scheme [ESOS] Regulations 2014, which oblige companies to carry out energy audits. In a briefing, Joanna Ketteley and Michael Rudd at law firm Bird & Bird said: 'These regulations would be unlikely to change directly because of a Brexit, although – depending on the form of the Brexit – the UK may have to amend its national legislation to account for changes or progress in the EU frameworks.'

The legal position

Until the UK leaves the EU, legislation originating in Europe remains in place. The European Communities Act 1972 (ECA) enables EU regulations, such as REACH, to apply directly in the UK and EU directives to be implemented through primary national legislation (acts) or secondary (regulations, rules and orders).

There are various options available to a future government, including repealing the ECA without qualification. This would result in EU regulations and secondary legislation emanating from EU laws no longer applying, although primary legislation would be unaffected. Alternatively, the ECA could be amended so all or some laws remain in place.

Brexit: what happens next?, a briefing paper published at the end of June by the House of Commons Library, states: 'There is no reason why EU-based UK law could not remain part of UK law, but the government would have to make sure it still worked without the UK being in the EU.' This could entail replacing references to the European Commission or Council with 'the secretary of state', for example.

Devolved administrations would be responsible for EU legislation transposed into Northern Irish, Scottish or Welsh laws. Brexit, coupled with possible future Scottish independence, could lead to greater legal divergence across the UK.

The approach adopted will depend on the new relationship between the UK and the EU. UKELA, the association for environmental lawyers, has set out three scenarios:

- **Little change** – this would be the case if the UK followed Norway, Iceland and Liechtenstein and became a member of the European Economic Area. The UK would have little influence over new environmental laws, however.
- **Broadly the same** – the UK may decide to preserve existing laws to enable businesses to trade with countries in the EU.
- **Home grown** – the UK could opt to go it alone and replace some environmental protection laws with its own. However, the government would not have an entirely free hand since many EU laws also implement international treaties (below) and agreements. It would also have to consider what to do about national laws that implement EU law. UKELA warns: 'Given the large number of laws and measures at issue, this exercise could take a huge amount of time and effort, and will raise some knotty questions.'

The UK remains bound by the international conventions to which it is a signatory, including: access to environmental justice (Aarhus); climate action (Kyoto protocol); habitat protection (Ramsar); and the control of transboundary movements of hazardous wastes and their disposal (Basel convention).

Planning, EIA and nature

Most planning law is UK-based and does not derive from the EU. The main exceptions are the Environmental Impact Assessment (EIA) Directive and the birds and habitats directives.

Practitioners were expecting a consultation on the transposition of revisions to the EIA directive this summer. This should go ahead as normal because the UK would still be a member of the EU at the time of the transposition deadline in May 2017, according to Stephen Tromans QC, barrister at 39 Essex Chambers. Josh Fothergill, policy and practice lead at IEMA, says the government team responsible for transposing the directive met at the end of June. However, consultations have to be signed off by ministers, which could be tricky politically, he adds.

'Whether the consultation is delayed is hard to say,' Tromans says. 'Would it be seen as politically unpalatable to transpose what might be seen as a regulatory burden if we are on our way out? But legally, there's no question. We have to transpose it as long as we are part of the EU and the courts have to support that.' Even if the directive is not transposed, there could be legal challenges to environmental statements that do not comply with EU law, he believes.

Angus Walker, partner at legal practice Bircham Dyson Bell, questions whether the EU would take enforcement action against a member state that has committed to leave the union. However, he warns that whatever deal the UK reaches with the EU could include a requirement to adhere to the directive. Nigel Howorth, partner at global law firm Clifford Chance, believes that, even if the government chooses not to transpose the reformed EIA directive fully, it is likely to retain some elements, such as the need to incorporate consideration of climate change, in order to meet domestic targets.

Other measures that could prove time-consuming and onerous for developers, such as the expected effects of vulnerability of the development, might be ignored, Howorth says. The government could also change the thresholds at which EIA is required

Repealing the European Communities Act would result in EU regulations and secondary legislation no longer applying in the UK

so that fewer developments need to undergo assessment. Ultimately, there are several international commitments that now expect some kind of environmental assessment so the concept would have to be retained in some form, he said.

Lawyers have flagged the nature directives on habitats and birds as possible regulation the UK would seek to water down. Neither directive would continue to apply, even if the UK pursues membership of the EEA. Both are part of UK law, but Tromans says: 'This is the main area where there could be rollback. We know that they are not liked by developers as they see the requirements as onerous.' The UK would still have obligations as a signatory to international agreements, such as the Bern Convention on biological diversity, but they are not as strong as the nature directives, Tromans adds.

Howorth agrees that the nature directives could be targets, in particular the need to demonstrate imperative reasons of overriding public interest (IROPI) if a development is judged as damaging to a European protected site. However, Simon Colvin, partner and head of environment at law firm Weightmans, believes the nature directives would not just stop applying once the UK leaves the EU. Colvin cannot see any political appetite for scrapping them, with consulting on reform more likely.

Products and services

In 2015, about 44% of UK exports went to other EU countries, while 53% of imports came from them. Irrespective of what a future UK government decides to do about legislation stemming from the EU and its ongoing relationship with Europe (see panel, p18), businesses that place goods on the European market or supply EU companies would need to continue to comply.

The EU chemicals regulation (REACH) places obligations on EU manufacturers, importers and suppliers of substances. Matthew Germain, legal director in the environment group at Osborne Clarke, says opting out of REACH would present the government with the challenge of how it 'tracks, evaluates and registers the (often seriously hazardous) chemicals that are used in commercial supply chains'.

Obligations under REACH will continue to apply and, as lawyers at Clifford Chance point out, are unlikely to change whatever exit agreement is reached between the UK and EU. They say: 'It is worth noting that REACH already impacts upon non-EU manufacturers since its requirements apply at the point of entry of products into the EU. In many cases, non-EU countries use local subsidiaries or EU-based third party representatives to assist in compliance. Similarly UK manufacturers may well have to restructure their supply chains to comply.'

The final REACH registration deadline is 31 May 2018, so it is likely firms will have to comply before the two-year timeframe for Brexit negotiations under Article 50 is completed. In a statement, the European Chemicals Agency said the deadline would still apply to UK chemicals companies.

The REACH evaluation process enables member states to influence the authorisation and restriction of substances identified as of very high concern. Although EEA membership would allow the UK to continue to play a role

in authorisation, this would cease if it exited completely. The global classification, labelling and packaging rules for chemicals (UN GHS system) are implemented in the UK through EU regulation. The UK would have to retain the regime for companies to export substances to the EU.

The EU legislation restricting the use of specified hazardous substances in electrical and electronic equipment (RoHS Directive) must also be complied with for trade. Simon Tilling, senior associate in Burges Salmon's environment and energy team, says: 'If the UK does not implement identical regulation there is a danger that UK products cannot be exported into the EU. Given that Europe is our major trading partner, there would be no option but to continue to keep pace with European product stewardship legislation.'

The environmental permitting regime in the UK derives partly from the EU system of integrated pollution prevention and control (IPPC) set out in the Industrial Emissions Directive (previously the IPPC Directive). Under this, emissions to air, water and land, plus a range of other environmental effects, must be considered together. Regulators must set permit conditions, based on the use of the Best Available Techniques (BAT), to achieve a high level of protection for the environment as a whole. Over the past 15 years the EU has published reference documents (BREFs), setting out how to achieve BAT standards. Lawyers at Clifford Chance say that, post Brexit, the government could revert to the cost-benefit model that existed under the UK integrated permitting regime before the IPPC Directive was enacted. 'Given that BREFs would no longer formally apply, the UK might also have to design a whole new set of technical guidance,' they warn.

Enforcing regulations

Enforcement of environmental regulations could suffer as a result of the decision to leave the EU, lawyers believe. Colvin says that, although the UK will continue to abide by EU law until it completes the leaving process, he has concerns that enforcement may slacken: 'I have a horrible feeling that an element of paralysis will creep in in terms of environmental regulators and their approach to enforcement and guidance.'

He ponders whether regulators will pursue offenders if they need to start litigation based on a piece of European legislation knowing that it will take some time to come before the courts. 'I think there are things that can be done to prevent that – I expect some primary emergency legislation in the very near future about what current legislation and case law is in the interim period. Without that there's not enough certainty for regulators and businesses to operate.'

Caroline May, partner and head of environment at Norton Rose Fulbright, says big business could self-regulate, but smaller firms found this impossible. 'We do need a stick as well as a carrot to provide that certainty and framework,' she says.

There will also be uncertainty over the question of case law and how long it continues to apply. Colvin says this is particularly important in terms of how directives governing waste and EIA have been interpreted. 'There's going to have to be a cut-off date in terms of how we're bound by judgments and a cut-off date for referrals to the European Court of Justice. That should be part of the exit agreement.' But he predicts increased litigation and uncertainty over the outcome of court cases in the future, as barristers start to pick apart case law. 'The fact that you will no longer be able to refer an issue back to the ECJ will inevitably increase litigation, as people will adopt a "have a go" attitude to see if they can get a different result,' he says.

According to Tromans, case law will not necessarily cease if the UK remains part of the EEA because the EFTA court would apply case law in deciding compliance matters. 'UK courts have now got very much into the mindset of interpreting legislation in a European way and I don't think this will change,' he says. 'At some point ECJ case law will have less relevance but I don't think lawyers will be able to stop referring to Europa and the ECJ website.' Ultimately, it could be some time before the UK gets to that stage, Tromans believes. 'The administrative task is mindbending – to reach an agreement with the EU in the first place, and then to disentangle decades of law. It's going to be extremely difficult and the question of environmental law is going to be a long way down the list of priorities.'

Resource management

Recycling targets, the waste hierarchy and definition of waste all stem from Brussels, and Brexit has significant implications for the waste sector. Steve Lee, chief executive at Resources & Waste UK, says: 'EU legislation has been a key driver behind the UK's rapid progress on sustainable resource and waste management over the past two decades and the referendum outcome leaves our sector particularly exposed to the financial and policy uncertainty.'

A pre-referendum briefing paper from UKELA, the environmental lawyers group, warned: 'Any relaxation of producer responsibility rules [such as those governing waste electrical and electronic equipment, batteries and packaging] at national level might impact on the ability of businesses to undertake trade within the EU, if revised UK standards varied from those adopted in the EU.'

It concluded that the UK could apply its own definition of waste that is traded nationally but still adhere to the EU and Basel convention on exports of hazardous waste. However, it is likely that this would increase rather than reduce perceived regulatory burdens.

After Brexit, the UK could opt out of plans for a more circular economy in Europe, including the higher recycling targets proposed by the European Commission in December. Other elements of the circular economy package would apply, however. Requirements for better eco-design of products, including improving repairability, durability and recyclability, is one area that will apply irrespective of whether the UK is fully outside the bloc. Nonetheless, the UK's influence in developing the policy legislation to bring to life the circular economy package will now be limited.

In the run-up to the referendum, Roy Hathaway, European policy adviser at the Environmental Services Association, warned that Brexit would 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.'

Counting the cost

John Barwise checks out the motivations and metrics behind corporate carbon footprinting

Carbon footprinting falls into the adage 'if you can't measure it, you can't manage it'. The problem for most organisations is deciding what to measure and which footprinting calculator fits their business needs.

A Google search reveals a plethora of calculators: some measure direct emissions only, others cover only products or activities. The more ambitious ones focus on the full carbon lifecycle assessment (LCA) across an organisation and its supply chains.

Getting on board

At the climate change summit in Paris last December, 114 companies pledged to reduce their own greenhouse-gas (GHG) emissions in line with the goal of keeping the global temperature rise below 2°C – the threshold that most scientists agree would trigger abrupt climate change.

Some of those companies, including Kellogg, P&G, Unilever and IKEA, have already had their targets approved under the Science Based Targets initiative set up by WWF, CDP, World Resources Institute (WRI), and UN Global Compact to encourage businesses to cut emissions. For many larger UK organisations, reporting GHG emissions is a legal requirement under the Companies Act 2006. Others are required to report them through the EU emissions trading system (ETS) or the domestic carbon reduction commitment energy efficiency scheme. But the business case for organisations of all sizes to measure and report their carbon footprint is persuasive.

According to Defra, the benefits include improving operational efficiency, lower energy and resource costs, a better understanding of business exposure to the risks of climate change, and a strengthening of leadership and green credentials that build investor and stakeholder confidence in an increasingly environmentally conscious marketplace. The Carbon Trust claims that 67% of UK consumers are more likely to buy a product with a small carbon footprint.

Looking at a footprint

A carbon footprint is generally defined as the total GHG emissions caused directly or indirectly by an individual, organisation, event or product. The total is expressed as CO_2 equivalent (CO_2e) to take account of not just carbon dioxide but other gases, including methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). All of these have

Case study I

NetPositive – Northamptonshire Healthcare NHS Foundation Trust

Sustainability consultancy NetPositive was responsible for the first carbon footprints produced for NHS organisations in 2007 through the PCT carbon reduction programme. Since then, NetPositive has worked with numerous NHS organisations so that they can quantify their carbon emissions and design projects and programmes of work to reduce their environmental impacts. One is Northamptonshire Healthcare NHS Foundation Trust (NHFT).

Why carbon footprinting?

The NHS accounts for about 25% of all public sector carbon emissions in the UK and 3.3% of all emissions in England. NHFT recognised that its operations affected the local environment and the health and wellbeing of people living and working nearby.

As a healthcare provider, the trust regards it as its ethical responsibility to limit the environmental and social impact of its operations. The trust uses carbon footprinting to monitor its impact as part of its sustainable development management plan (SDMP).

Legislative and other policy drivers also compel NHS organisations to act on sustainability and monitor their carbon footprints. These include the Climate Change Act 2008, Department of Health mandated annual sustainability reporting, the NHS carbon reduction strategy and the NHS standard contract.

What is measured?

NHFT wanted to demonstrate responsible stewardship and decided to include procurement activity alongside the more established reporting on energy, waste, water and travel emissions. The trust reports these emissions as its core footprint and has set reduction targets against which it monitors progress using Greenhouse Gas Protocol scopes 1, 2 and 3 (see main text).

The footprint has been verified by a third party as part of NHFT's certification to the Investors in the Environment standard. This enables the trust to visibly demonstrate its commitment to reporting its environmental performance and reducing emissions year on year.

Results and benefits

Completing an annual carbon footprint now forms part of the NHFT's SDMP and represents a key metric for monitoring environmental performance. Understanding operational carbon emissions site by site has allowed the trust to target the worst performing ones with improvement actions, such as energy efficiency measures, which may include installing LED lighting and new boilers in buildings.

The footprint helps to raise the profile of travel as a significant factor. Interventions to reduce the effects have included trialling a fleet of electric vehicles and developing fleet environmental performance criteria for procuring new vehicles.

For more information email enquiries@netpositive.org.uk

relative global warming potential and are included in the Kyoto protocol on GHG emissions restrictions.

The Greenhouse Gas Protocol, developed by the WRI and World Business Council on Sustainable Development (WBCSD), sets the global standard for measuring, managing and setting boundaries for reporting GHG emissions.

To delineate between direct and indirect emission sources, these are categorised into 'scopes':

- Scope 1 – direct emissions released into the atmosphere from activities in an organisation's control, including those from onsite fuel combustion, boilers and other industrial processes.
- Scope 2 – indirect emissions released into the atmosphere that are associated with the consumption of purchased electricity, heat, steam and cooling. These indirect emissions are related to an organisation's activities but occur at sources not directly under its control.
- Scope 3 – other indirect emissions, which are the consequence of an organisation's activities but which occur at sources outside its control. These include purchased materials, business travel, water consumption and waste disposal.

The protocol serves as the basis for most GHG standards, including ISO 14064-1, which specifies guidance at the organisation level for quantification and reporting of GHG emissions and removals. A related standard, 14067, details principles, requirements and guidance for the quantification and

Case study II

Anthesis

Global sustainability consultancy Anthesis has calculated thousands of carbon, water and ecological footprints for organisations, products, events and cities. These provide a basis for acting on the results, and help clients reduce their impact, save money and build more resilience into their businesses. One of its clients is a European packaging company.

Why carbon footprinting?

Carbon footprinting is essential to understanding the impact of the packaging firm and its products. It has operations globally and wanted to improve the ease and accuracy of collecting data from its many sites. More importantly, the firm was intent on engaging local business unit teams so they could see their own environmental performance. Anthesis developed a solution using a tailored package called Footprinter to collect unit data and focus frontline teams on environmental key performance indicators and analytics to collect all their facility impact data and generate custom reports. The footprint information is reported internally and externally to demonstrate performance year-on-year and comply with mandatory reporting standards.

What is measured?

The firm collects and reports on its operational data, including energy, waste, transport and consumption of raw materials. Both company and product footprints are monitored and reported. Footprinter is a software package based on the GHG protocol and Defra guidelines.

Results and benefits

The firm is on track to meet its 2020 reduction targets. It is expanding its environmental scope to focus on key hotspots and is working with suppliers and customers to reduce impacts. The results have made it easier to spot opportunities for reduction and have empowered business units to act. Having the detailed carbon footprint information allowed the company to benchmark against its peers, tracking and reducing emissions, and cutting costs. The software allows it to have real-time access to the footprint across the company. The firm can generate tailor-made reports and make use of the data provided. It also enables employees to be actively involved in the collection and monitoring of site-specific data.

For more information visit anthesisgroup.com

communication of the carbon footprint of products, including goods and services, based on GHG emissions and removals over the lifecycle of a product.

Nigel Carter, a member of the International Organisation for Standardization's committee on greenhouse gases and chair of the UK mirror committee, explains their relevance: '14064-1 is a requirements standard and provides what the verifiers describe as a "reasonable" or "limited assurance" for the accuracy of the inventory. It is typically used for international trades and for regulatory accounting purposes in a scheme similar to the ETS. 14067, on the other hand, is geared towards consumers who wish to make more sustainable buying choices. The outcome here is the quantity of GHG emissions associated with a product unit, for example kilogrammes of CO_2 per tonne of cement, or grams of CO_2 per kilo of sugar.'

BSI, the UK's national standards body, defines a carbon footprint as 'the amount of GHG emissions caused by a particular activity or entity'. In 2008, BSI, in co-operation with Defra and the Carbon Trust, published the UK's first carbon footprinting standard, PAS 2050 (specification for the assessment of the lifecycle GHG emissions of goods and services). The primary objective of 2050 is to provide a common basis to quantify GHG output so that organisations can introduce more efficient emissions reduction programmes for their products and services.

2050 considers only the single impact category of GHG emissions associated with products (goods and services) and draws on the LCA methods established through BS EN 14040 and BS EN ISO 14044, as well as environmental labels and declarations covered in ISO 14020, to ensure whole lifecycle assessments are covered.

Carbon footprinting encompasses a range of sources, from direct emissions, such as fuels used on site, to those associated with supply chains and transport, which are indirect. For businesses, the key to carbon footprinting is to define the boundaries. A basic footprint might consider, for example, onsite fuel use, electricity and transport. A more comprehensive one would also include these but add emissions from industrial processes, land use and employee travel, as well as those related to suppliers' goods and services.

Guiding lights

There is a range of footprinting guides to help. One of these, published by the Carbon Trust, explains two types: one that measures an organisation's overall activities and another that focuses on the lifecycle

Case study III

Firefly

Integrated hybrid power systems company Firefly worked with a multidiscipline construction and resource management group to reduce emissions on a project in Bicester, Oxfordshire, with planning permission for 1,900 houses, a school, offices and shops.

Why carbon footprinting?

A £2.2m contract for infrastructure works at a 600 ha self-build community development is using Firefly's Cygnus 4 hybrid power generator.

For construction projects without a grid connection, diesel generators are often used to supply 24-hour power, even when only low loads are required.

By combining a diesel generator with a hybrid power system, diesel consumption is reduced, playing a vital role in reducing CO_2 emissions as well as nitrogen oxide and particulate matter onsite. In addition noise is reduced.

The decision to use the Cygnus 4 was in line with the contractor's commitment to be more sustainable.

What is measured?

The site required power 24/7. During the day, power consumption is high – for site activities, offices, the drying room, canteen and toilets. At night use falls significantly.

The Cygnus 4 unit was connected to the site's 160 kVA diesel generator and set to a continuous 'load-sensing' mode, which constantly monitored power requirements. The Cygnus turned on the diesel generator when high power was required, at the same time charging internal energy storage. When site loads fell, the Cygnus switched off the diesel generator and supplies power from the internal energy storage.

Measuring the unit's fuel savings, performance and CO_2 emission savings through use of Firefly's cloud platform provides real-time energy use reports.

The CO_2 calculations were based on:

- Size of diesel generator – consumption rates were validated for all diesel generators.
- Instant load data – the calculation references the load to consumption rates for generator size.
- Diesel to carbon calculation – this calculates CO_2 per litre of diesel, using 2.67/1,000 tonnes CO_2 per litre, based on government conversion factors.

Results and benefits

Adapting to changing needs improved carbon savings across all applications, including tower cranes, pumps, accommodation units and night working. The project used hybrid power for 74% of the time over a two-month period (966 hours), during which 36 tonnes of CO_2 emissions and 13,524 litres of diesel were saved.

The hybrid generator also overcame the challenge of having no grid power access without resorting to using diesel.

John Mustarde, sustainability director at Firefly, says: 'We heavily invest in our research so that our customers can significantly improve their energy efficiency onsite. Evidence of this is our recent update to the Cygnus range, which now includes a powerful lithium iron energy storage option.'

For more information visit fireflycleanenergy.co.uk

of a particular product or service. Organisational footprints include scope 1 and 2 from the GHG protocol, with some flexibility over scope 3 choices, such as waste sent to landfill and employee travel. The boundary for product carbon footprints extends across the product lifecycle to include suppliers, customers and distributors as well as emissions created by disposing of product waste and the impact of recycling.

In most cases, the methodology is broadly the same – define objectives and boundaries, collect activity data and emissions factors, and calculate the footprint. Calculating the footprint of a particular activity involves compiling the data, such as electricity use in kWh or daily water use in litres and multiplying the number by a carbon emissions factor represented as CO_2e per unit.

Decc (now absorbed into BEIS) publishes a set of conversion factors (bit.ly/1UN5neS) to help organisations calculate the GHG emissions of a range of activities, including energy use, water consumption, waste disposal, recycling and transport activities – although the latest version no longer contains international conversion factors.

The range of carbon footprinting tools is wide. There are simple ready reckoners for gauging the impact of a household, sophisticated business packages to measure the footprint at operational and organisational level, and some can be used by governments to evaluate regional and national effects.

Defra's environmental reporting guidelines are helpful on setting boundaries, methodology and defining a reporting framework for all organisations, while its small business user guide is particularly useful for small firms. There are also bespoke guidelines, such as the RICS (Royal Institution of Chartered Surveyors) methodology to calculate embodied carbon of materials, which is used by the construction industry to identify LCA in building materials.

Valuable insight

Nick Blyth, policy and engagement lead at IEMA, says carbon footprinting offers a valuable insight to wider value chain and lifecycle impacts: 'Carbon footprinting has matured. Early standards developments, such as 2050, have been revised and are still freely available. In the UK, Defra, Decc (now BEIS) and some academic bodies provide updated and freely available emissions factors. Complementing some valuable commercial, paid-for sources, this provision of credible and free guidance and data has been instrumental in helping the discipline to grow and establish.'

Public and private sector organisations are embracing carbon management in response to a combination of rising energy and materials costs, legal requirements to reduce emissions, and public concerns over the impacts of climate change. Those that adopt carbon footprinting as part of their management process are also seeing added value in terms of improved operational efficiency, better customer and stakeholder relations, innovation opportunities and improved competitiveness.

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

First-class delivery

Paul Suff reports on how the environment and sustainability practitioners at Royal Mail Group have come together to drive improvement

For Dr Shaun Davis the ideal sustainability practitioner is multi-skilled and thrives in an integrated safety, health and environment team. As director of safety, health, wellbeing and sustainability at Royal Mail Group (RMG), Davis is putting in place the systems, tools and support mechanisms to support such model professionals.

It is an approach that is also geared towards ensuring the business realises its ambition to be recognised as the best delivery company in Europe, to show it in a responsible and sustainable way, and achieve its corporate responsibility (CR) targets. The vision is supported by five CR priorities, including managing the environmental impacts of business operations and handling its transformation responsibly.

A team game

Davis says his focus since joining RMG in September 2012 has been on integration and creating an effective central CR function. This has entailed bringing together the separate health and safety, quality and environment teams and their activities, a trend he has observed in industry for some time and one he believes is accelerating. 'I think there is more call for safety, health, environment and even quality roles because there's tremendous crossover,' he says.

'We do safety and environment inspections and I don't see why they should be separate. It's much more efficient to have a multi-discipline team and combine the inspections. Why do two or three site visits looking at different things when you can do them all in one visit?'

Davis believes that combining audits is less disruptive for those being inspected and potentially more fulfilling for assessors. He says that, aside from technical knowledge, the core skills set is similar: 'It's about being able to assess, audit, coach and challenge effectively. So there's a natural fit.'

To improve technical competence, there are opportunities for staff to upskill by, for example, gaining environmental (IEMA) or safety (NEBOSH) qualifications. Davis is also keen for practitioners to develop 'softer' skills, such as communication, negotiation, persuasion and influencing, and management competence, particularly on how to build a compelling business case. 'I think as a profession we expect others to understand our world,' he says. 'It is all well and good knowing what the Environment Protection Act or the Health and Safety at Work Act says, but you need to translate it for others, whether they are in finance or HR or wherever. I think that's missing from formal qualifications. As sustainability practitioners we need to be understood so must resist resorting to jargon and acronyms.'

Ensuring practitioners are effective communicators is important because involving and engaging staff are key to RMG achieving its CR ambitions. It employs 139,000 people, who handle 15.5 billion letters and one billion parcels a year. The role of the central CR team is focused firmly on supporting frontline employees.

Ron Symonds, group head of environment at RMG, says communication needs to be clear: 'You need to engage staff with language they understand.' Drawing on his background in property and safety, Symonds is part of the central safety, health, environment (SHE) team, which sets standards, develops strategy and advises other functions. To illustrate how this works in practice, he refers to RMG's approach to communicating the topic of waste, which he believes has made it easier for staff to recycle and help the business to move towards its goal of diverting all waste from landfill (see panel, right). 'Since we introduced recycling, different types and colours of bins have been used but that has been confusing,' he says. 'Now the posters and bins focus on the importance of segregating waste onsite. The bins are transparent and the posters are crystal clear on what waste goes where.'

In 2015-16, 86% of waste was diverted and 60% of sites were no longer sending waste to landfill.

Creating a strong central CR team has helped to ensure the company's messages resonate, and strategies and actions are visible across the business, says environment programmes manager Ato Nimoh-Brema. When he joined about 12 months ago, he points out, the SHE function was fragmented: "Most departments had an environment function attached to it in one way or the other. Moreover, all large sites had an environmental lead, but it was hard to get a good oversight of what was going on. Having a central SHE function gives it visibility and helps prioritise what is important.'

Practitioners have also been encouraged to make more use of existing IT systems, such as team collaboration tools like SharePoint. Symonds says: 'We had SharePoint but it was not widely used, so now we get people to upload information to it and to share data.'

A systems approach

As well as upskilling, integrating and improving the efficacy of the CR team, RMG employs frameworks and tools to embed corporate responsibility. These include a corporate balanced scorecard, which is divided into people, customer, efficiency and financial segments, and its World Class Mail (WCM) system to drive continuous improvement. WCM has its origins in world-class manufacturing, a process-driven approach adopted from Toyota and other automobile, and electronic and steel companies, to create lean, efficient, cost-effective and flexible operations. Techniques include high employee involvement, cross-functional teams and multi-skilled employees.

'The ten pillars of WCM at RMG cover all operational activity, including safety, people development and environment. It works by involving staff in finding ways to reduce waste and losses,' says Symonds.

Davis describes WCM as crucial to embedding management of environmental impacts across the business. The WCM performance framework is used to prioritise reductions in energy and water consumption and waste. There are environment pillar leads at processing sites and large delivery offices. They can access best practice information online through the WCM good practice section on SharePoint.

Targets and performance

Royal Mail Group (RMG) has five corporate responsibility priorities, including managing the environmental impacts of business operations and delivering its transformation responsibly. Goals and performance related to these two priorities include:

- reducing CO_2 equivalent emissions by 20% by 2020-21 compared with 2004-05 levels – a 16.8% reduction was recorded in 2015-16;
- diverting all waste from landfill – 86% of waste was diverted in 2015-16 and 60% of sites no longer send any waste to landfill;
- reducing water consumption – 1,474.4 mega litres in 2015-16, a 2% reduction from 2014-15 levels; and
- ensuring new suppliers adhere to RMG's responsible procurement code – 100% compliance in 2015-16.

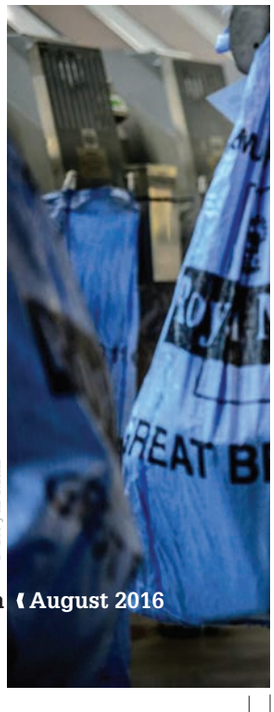
Nimoh-Brema says WCM has made a massive difference in recent years to how RMG works: 'Frontline staff are champions of change. They contribute ideas to improve environmental performance. Engagement is key to get people to pursue green initiatives.'

He also says Royal Mail's 14001 certified environment management system (EMS) reinforces the WCM approach. 'The environment pillar [of WCM] includes seven steps to implementing good environmental management. That's about going further than compliance and being proactive. The EMS identifies when something is not working, so we look to find out why and ways to improve.'

The seven steps to good environmental management include developing a biodiversity action plan. Medway mail centre in Rochester, Kent, was one the first RMG sites to produce a biodiversity action plan. It includes surveying an area 4.8 km around the 15,400 cu m site and creating natural habitats for species found.

There is also a SHE management system comprising 19 safety, health, wellbeing and environmental elements. Symonds is responsible for the environment ones. A SHE calendar contains key tasks for managers at RMG sites.

Davis heads RMG's environment governance board, which is responsible for developing strategies, targets and performance improvements. Members come from functions, such as fleet and facilities management, that are accountable for material environmental issues. The board is leading work on streamlining RMG's approach to environmental management, which should be completed in 2017. One of the objectives is to integrate it with the WCM philosophy and the SHE management system at site level.

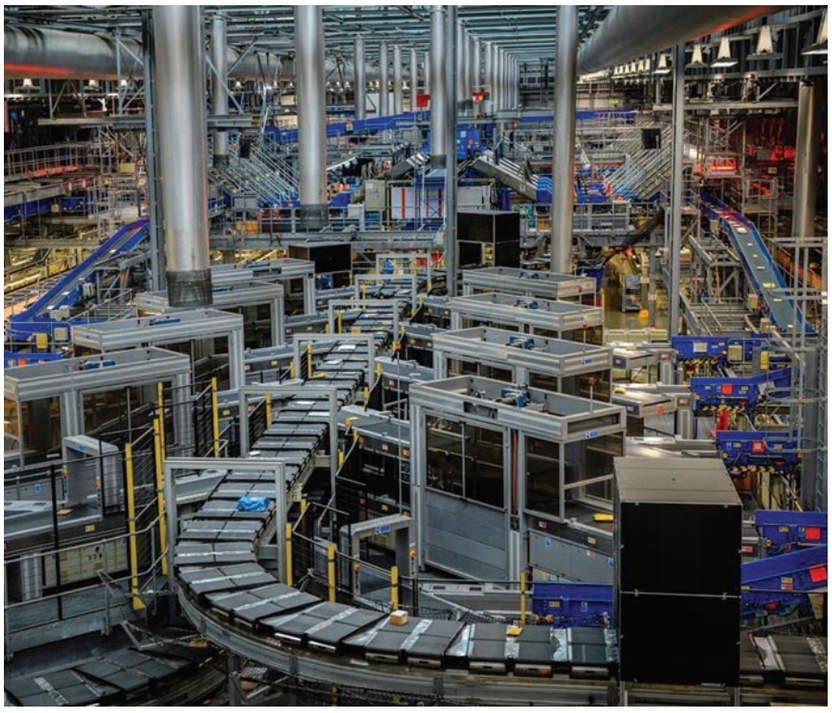


© Royal Mail

What is material?

Material environmental, social and governance issues are determined through annual assessments, involving internal and external stakeholders.

The latest assessment identified five key issues including, in the environment sphere, the large footprint and visible presence of RMG's 47,000 vehicles. These and other means of transport account for 68% of the organisation's carbon footprint, while buildings contribute 32%. The business is aiming to reduce



emissions by 20% by 2020 compared with 2004–05 levels. Symonds says that, due to the scale of its fleet, RMG has the potential to be an environmental leader in fleet management.

He says reducing vehicle emissions is challenging, particularly because items for delivery are becoming heavier and bulkier: 'Parcels are a growing part of our business,' says Symonds. 'But they weigh more and take up more space than letters, which increases the demand on vehicles and fuel consumption.'

RMG aims to finalise a new fleet environment management strategy next year. Meanwhile, 91% of its 7.5-tonne HGVs and 38% of its overall fleet have been fitted with telemetry monitoring and control systems to help reduce fuel consumption by alerting drivers when 'moderate' or 'harsh' handling occurs, such as strong acceleration. RMG is also testing vehicles that are more fuel-efficient or run on alternative technologies, such as electricity. Better fleet maintenance can also bring down emissions. Re-treading 789 tyres in 2015–16 for reuse saved 213 tonnes of CO_2 equivalent.

RMG's buildings too are being subjected to environmental scrutiny and improvement as work continues on reducing their energy use and emissions. Given rising energy prices and climate legislation, RMG says this is a commercial imperative (see panel, left). Half of its mail centre estate has installed LED lighting and the benefits are clear. Replacing fluorescent lighting at Tyneside has reduced the mail centre's energy consumption by 32%, for example. Symonds says complying with the energy savings opportunity scheme (ESOS) provided a window for making further improvements in energy management: 'ESOS gave energy greater visibility among senior management, helping us to make the business case for investment in SMART building systems, which is important when you're competing for money with other parts of the business.'

A better position

The changes to how the CR function at Royal Mail operates are continuing. Davis says he wants to move to a position where the team is not seen by the rest of the business as solely responsible for policing legal compliance, whether that is for health and safety, environment or wellbeing, or delivering improvements. He wants everyone in RMG to be involved and a fully integrated, multi-skilled CR team to be on hand to help.

One tip Davis would offer other environment and sustainability practitioners working in large organisations is to remember that they are part of a wider business. 'You need to understand your contribution and how it fits in with what the business is trying to achieve. If you can do that, you'll be much better placed to progress the environment and sustainability agenda.'

This belief stems from his view of the role of sustainability in businesses. 'I believe it's about making a positive contribution to the success of the business while protecting the people who work for it and the environment we all share.'

Risks and opportunities

Royal Mail Group's (RMG) principal environmental risks are:

- price rises due to resource scarcity;
- increased landfill taxes;
- increased carbon taxes and compliance and operational costs due to climate change; and
- reputational risks associated with not addressing and managing resource use effectively.

It says these risks are balanced against opportunities derived from effective management. These include:

- reduced running costs and increased efficiency;
- lower waste disposal costs;
- opportunities for revenue generation through recycling as well as through new product and service developments; and
- reputational benefits that engage customers, employees and other stakeholders in recognising RMG as a responsible business.

Source: Royal Mail Group Corporate Responsibility Report 2015-16.

Falling emissions across the UK: 2005–14

(MtCO2)w

North West: –28%

2005	2014
60	43

Northern Ireland: –12.5%

2005	2014
16	14

West Midlands: –22%

2005	2014
45	35

Wales: –12%

2005	2014
33	29

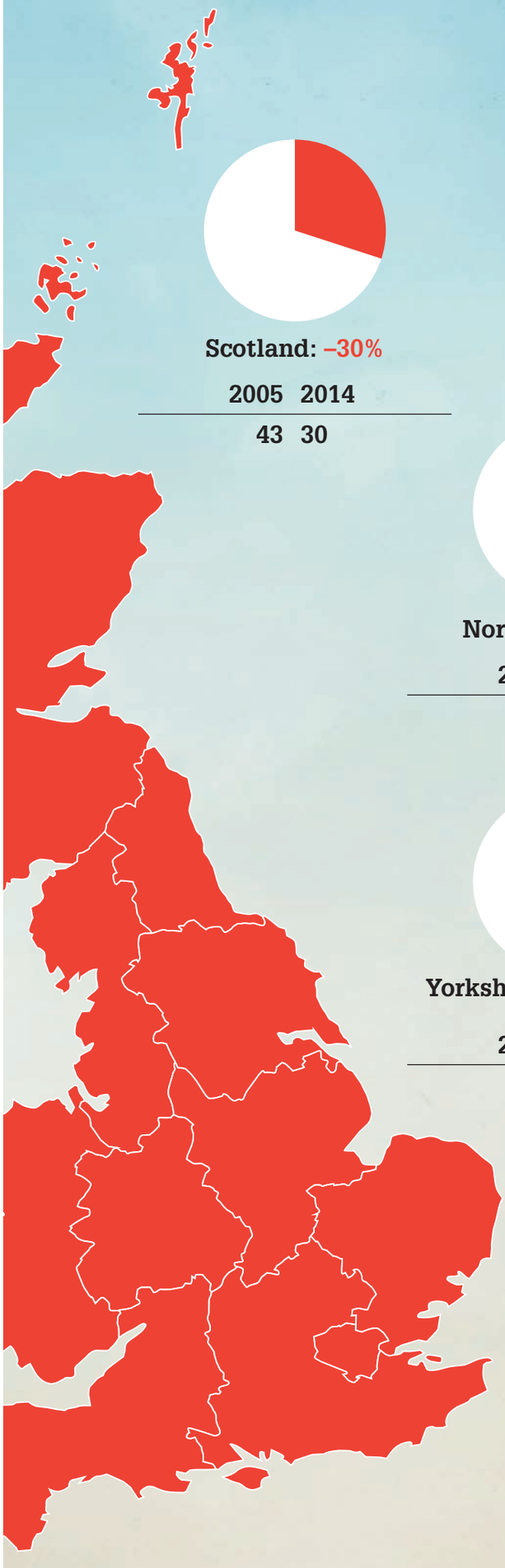
South West: –22%

2005	2014
41	32

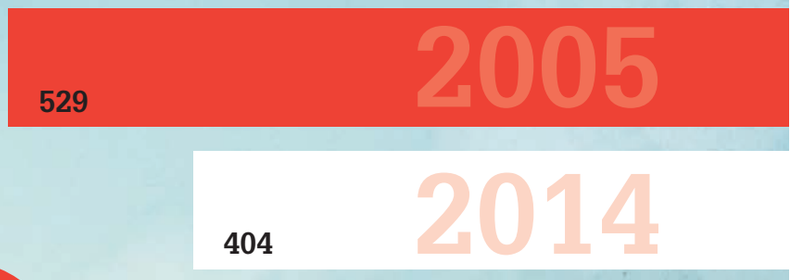
Factors influencing changes

The aggregated local authority data reveals that total UK carbon emissions decreased by 24% between 2005 and 2014. Emissions fell in all regions, with the scale of the decline influenced by activities at industrial sites and according to sector. The largest percentage decrease in the industrial and commercial sector was in Gravesham, Kent, where the closure in 2008 of a cement works reduced emissions by 89%. By contrast, the highest percentage rise was in Neath Port Talbot (up 16%), due to increased activity at large industrial sites. Transport emissions declined most in the London Borough of Wandsworth (down 27%), while the largest fall in domestic emissions was in Blackpool (35%).

Local Authority Carbon Dioxide Emissions 2014, Decc (bit.ly/29sarGJ).



Overall UK reduction



Scotland: –30%

2005	2014
43	30

North East: –32%

2005	2014
31	21

Yorkshire and Humber: –26%

2005	2014
53	39

South East: –25%

2005	2014
67	50

East Midlands: –21%

2005	2014
42	33

East of England: –22%

2005	2014
46	36

Greater London: –23%

2005	2014
47	36

Assessing health and wellbeing

The new EIA Directive requires an assessment of impacts of projects on human health. **Howard Waples** provides some guidance

For the first time the effects of a project on population and human health are to feature in environmental impact assessments. The change is being ushered in by Art 3 of the new EIA Directive (2014/52/EU). This will expand on the principles of the previous directive (2011/92/EU), which required only the consideration of 'human beings', and the UK's EIA Regulations 2011, which referred to 'population'.

The revised demands may be challenging to some, confusing to others – who may think that human health impacts are already considered in EIA – and concerning to those who fear it will remove the essence of what health impact assessment (HIA) is designed for and does most effectively.

High-profile issues, such as the debate over airport expansion in the South East, have placed the effects of major projects on human health among the priorities for stakeholders and the public, and the established mechanisms for assessment of health have come under increased scrutiny. Meanwhile, another piece of legislation, the Health and Social Care Act 2012, is changing the framework for the provision of public health and the organisations involved. Crucially, it introduces a duty on a local authority to 'take such steps as it considers appropriate for improving the health of the people in its area'.

More than physical health

The European arm of the World Health Organization (WHO) defines health as a state of complete physical, mental and social wellbeing, not merely the absence of disease or infirmity.

Public health, therefore, encompasses general wellbeing as well as the absence of illness. Some effects on health and wellbeing are direct and obvious, others are indirect, and some may be synergistic, with different types of impact acting in concert.

In recent years, the expertise and supporting knowledge behind assessing health and wellbeing impacts have grown rapidly, and there is a wealth of literature, guidance and training available on HIA. It is important that someone wishing to practise HIA is familiar with this information.

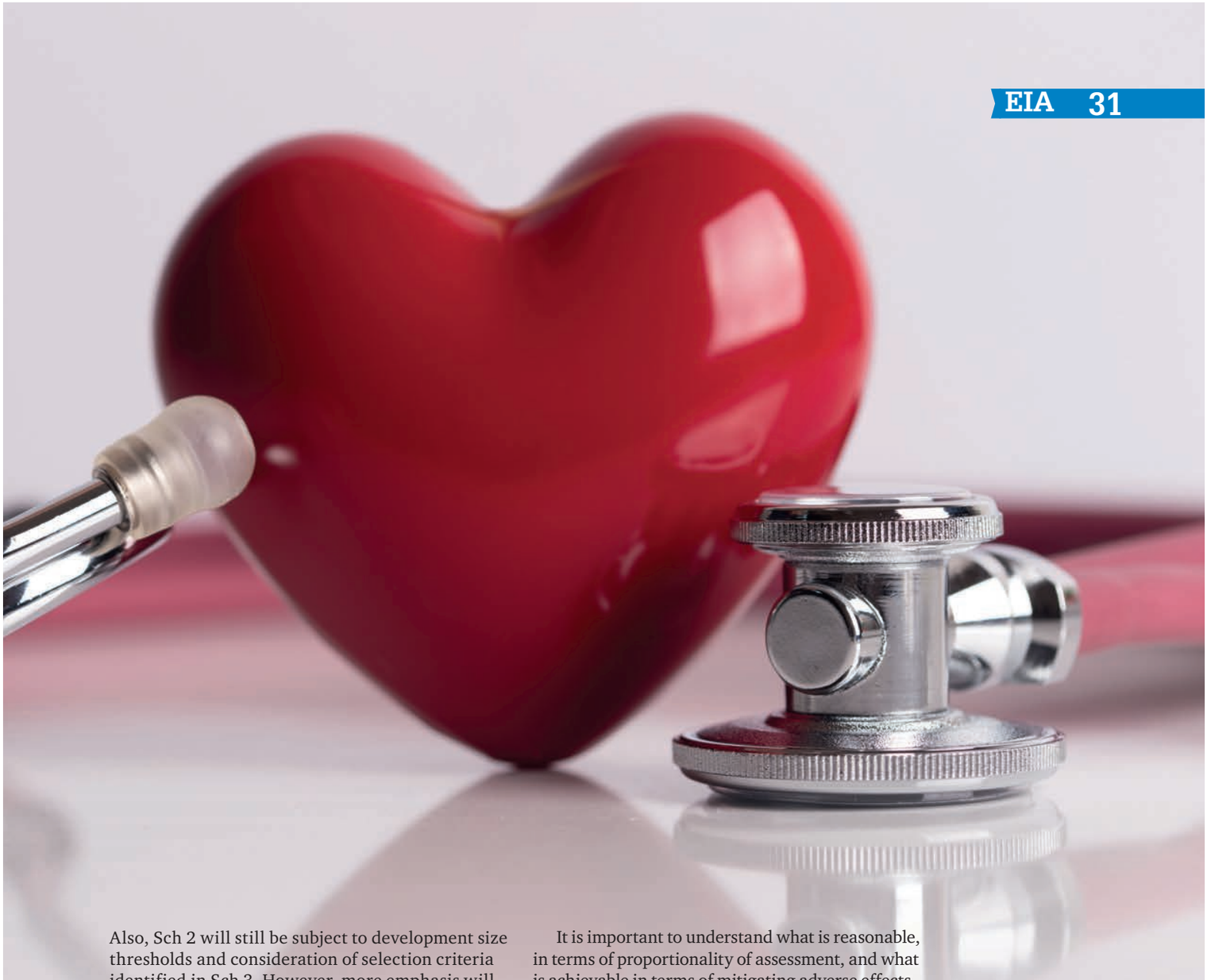
A review of some of the literature shows that human health and wellbeing can be influenced by almost everything to a degree. These factors are known as 'determinants of health', and it is possible to fit these into four broad groups – individual, lifestyle, environmental and socio-economic factors (see panel, p31). Typically, the EIA process has considered only human effects on the environment, such as air quality and noise, and socio-economic factors, and has made specific connections between impacts and health and wellbeing according to topic. However, health and wellbeing impacts should be considered as a combination of a wider range of health determinants.

Effective steps to integration

Understanding how the environment around us influences health and wellbeing is the key part of how EIA practitioners will need to adapt when 2014/52/EU is transposed into UK legislation – no later than 16 May 2017, though this may depend on negotiations on the UK leaving the EU (pp16–20). HIA has been developed specifically to assess human health and wellbeing rather than the environment in general, so it is reasonable to use this as a basis of best practice.

The stages of HIA largely reflect the stages of EIA:

- **Screening –** There will still be Sch 1 and 2 developments under the revised EIA directive.



Also, Sch 2 will still be subject to development size thresholds and consideration of selection criteria identified in Sch 3. However, more emphasis will need to be put on densely populated areas since they have a greater potential to influence the health of more people.

Regardless of this, the focus of EIA in health terms will be to identify and mitigate likely significant effects. This raises the question of what is significant in human health terms. This has the potential to become a controversial and poorly considered practice without some clear official guidance being issued. Another factor could be that the 'fear' of a project could result in anxiety and depression (both mental health issues) when the assessment of the health impacts focuses only on those that actually result from the project itself. In this case, it would seem reasonable that fear in itself should not reasonably trigger an EIA on health grounds (since an EIA would then be required for everything), although it is recommended that early engagement and reassurance of local people would mitigate this.

- **Scoping** – To understand how a project is likely to affect the health of a population, it is essential to know broadly whose health may be affected, and whether there are likely to be any significant effects. Scoping of this topic would also require a description of the methodology to be used – such as desk-based or engagement driven quantitative or qualitative reporting.

It is important to understand what is reasonable, in terms of proportionality of assessment, and what is achievable in terms of mitigating adverse effects and enhancing beneficial ones. It is also important to understand that sometimes a project can have both a positive and negative impact on different determinants of health. A new bypass may reduce the impact of congestion, driver stress, noise and air quality and community segregation in one location, but could increase it elsewhere and negatively affect landscape and ecology, both of which are important for mental health. However, it is hard to gauge accurately how different health determinants interact. Also, health and wellbeing effects can manifest themselves over different timescales (acute or chronic) and in different ways to different people.

Factors determining health

Individual	Age, sex and hereditary issues, pregnancy and disease.
Lifestyle	Drinking, exercise, diet, smoking and drug use.
Environmental	Agriculture and food production, water and sanitation, and housing quality.
Socio-economic	Education, deprivation, crime/fear of crime, employment/unemployment/job security, work environment, social networks and social capital, amenity, entertainment, culture, faith, and healthcare and social infrastructure.

The EIA scoping report should therefore set out what a project's health and wellbeing effects are likely to be, who they are likely or unlikely to affect, and at what spatial or temporal scale. It should describe the methods proposed to obtain the community profile, the stakeholder engagement proposed, and whether the applicant has any particular aspirations to avoid affecting health and wellbeing. The determining authority for the EIA should ensure that public health authorities, such as Public Health England, are consulted at the scoping stage.

The health assessment will be subject to the EIA Regulations so it is important to determine whether the health impact is significant

- **Establishing a baseline** – This will identify the receptor groups in the study area and determine their sensitivity. As a general rule, determining health impacts should not focus on individuals. This is because, first, the 'individual factors' determining health are not something a project normally affects; second, every individual is different and will have a different susceptibility or sensitivity to health determinants; and third, the amount of data that would need to be collected to give meaningful results would be prohibitive.

A receptor group is a collection of individuals sharing similar characteristics, with a similar sensitivity to health and wellbeing. Sensitivity can be stated in general terms, comparative to other receptor groups – see panel below for examples. In HIA, a large part of understanding the baseline is to establish the community profile. This not only presents the health and wellbeing data from communities affected, but it can build on the availability of social infrastructure – the socio-economic health determinants, such as hospitals, schools and accessible open space. It may also be advisable to cross-reference to other EIA topics to understand congestion and air quality because these contribute to the health determinants.

Receptor groups

Health and wellbeing receptor group	Sensitivity to changes in health determinants (relative)
Children and pregnant women (local residents)	High
Working age people (local residents)	Medium
Elderly people (local residents)	High
Disabled people (local residents)	High
Locally employed people (all ages)	Low
Transient people (people travelling through an area)	Low

- **Assessment, mitigation and enhancements** – The assessment itself must be proportionate to the degree of health impact expected. In principle, there are three main types of HIA, which can also be applied to health and wellbeing in EIA:
  - desktop – a shorter duration assessment against a set of health indicator questions undertaken purely using desk-based research;
  - rapid – a medium duration assessment, relying on a degree of stakeholder or public engagement, that may include a stronger evidence base and set of recommendations to identify opportunities for mitigation or enhancement; and
  - comprehensive (when a project has likely significant health and wellbeing effects) – a longer duration assessment, relying more heavily on stakeholder or public engagement, and using quantitative and more complex data.

To assist in the assessment, there are tools to assess health and wellbeing impacts, such as the Healthy Urban Development Unit (HUDU) checklist (bit.ly/29U8Zf5) and its rapid health impact assessment tool (bit.ly/2aarS3e). The assessment itself can be supported by qualitative discussions with local people, quantitative analysis – such as epidemiological studies and modelling of collisions or airborne particulate matter – and use of the health economic assessment tool (HEAT – bit.ly/1zAYIOh).

The assessment is likely to require input from various documents to provide an evidence base for the assessment. These include: the design and access statement (or equivalent design documentation); statement of community involvement; planning statement or statement of case; transport assessment; construction logistics plan; other technical chapters of the environmental statement; s 106 heads of terms; code of construction practice; and the environmental management plan.

As with other EIA topics, the assessment should be based on a reasonable set of assumptions – for example, standard construction mitigation will be used, and the design will accord with accessibility legislation. The assessment will be subject to the EIA Regulations so it is important to determine whether a health and wellbeing impact is significant. Although guidance on this would be valuable, the assessor will need to rely on expert judgement and discussions with other professionals to determine significance. Broadly, assessing significance of health and wellbeing effects can follow a similar principle to other environmental topics, whereby significance is a factor of both the sensitivity of a receptor group and the magnitude of change (see panel, left). This can be shown in a matrix (p33).

- **Monitoring** – The revised EIA Regulations are expected to include a requirement to monitor impacts identified by the assessment throughout construction and operation. This could entail establishing a monitoring framework based on the same set of health indicators used in the community profile. Over time, the change in the

direct and indirect impact of different types of schemes will become clearer, as will information sharing on the effectiveness of mitigation.

However, census findings and data related to public health will give only the overall range of health determinants. This approach would not allow for the isolation of how the project alone affected health and wellbeing. In addition, it may not consider that populations and communities can be transient, and that health data may be misleading. For example, an urban regeneration project may bring in new residents and a new social infrastructure and lead to apparently positive health impacts.

Targeted support

The assessment process outlined allows mitigation or enhancements to be targeted at particular groups of people or the wider population. In common with other EIA topics, it is essential that project applicants commit to mitigation and enhancement measures, and it is helpful for the mechanism for implementation to be described. This aspect will differ from traditional HIA, which allows the practitioner to state recommendations with no guarantee that they are implemented. Other measures for monitoring impacts could be to conduct further stakeholder engagement once operational – particularly involving individuals or organisations that were involved at the project planning stage.

Monitoring health and wellbeing will greatly benefit from sharing outcomes from projects to determine the observed impacts and effectiveness of mitigation. This will ensure that projects can fulfil the opportunities they have to reduce health inequalities and to improve the health and wellbeing of wider communities.

Significance matrix

Receptor sensitivity	Impact magnitude			
	Large	Medium	Small	Negligible
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible

Howard Waples is associate director at consultancy RPS.

The **IEMA impact assessment network** has established a health assessment group, which is working on how best to integrate health considerations into future EIAs. Joanna Bagley, who chairs the body and is senior associate director of EIA at consultancy Waterman Group, says the aim is to improve understanding of the HIA and EIA processes among practitioners.

Nigel Marsh

Global head of environment, Rolls-Royce

Career file

Qualifications:
BSc (Hons) Metallurgy, CEnv, MIEMA

Career history:
2000 to date, global head of environment, Rolls-Royce
1997 to 2000 environmental auditor/improvement manager, Rolls-Royce
1997 senior consultant, Entec
1992 to 1997 environmental auditor/consultant, Environmental Services Unit
1984 to 1992 senior research officer, International Research and Development
1982 to 1984 project/process engineer, Davy McKee Corporation
1979 to 1981 sponsored student, British Steel

Why did you become an environment/sustainability professional? I started supporting some early environmental audits as BS 7750 was emerging and looking at environmental liabilities from an insurance perspective. With the emergence of ISO 14001, I decided to take the opportunity to move into environmental management as it was an area of natural interest for me. Having been in research and development, I also liked the excitement of doing something for the first time and making it work. It also felt like this was an area where we should all be doing more.

What was your first environment/sustainability job? As an auditor and then moving to become a corporate environmental manager.

How did you get your first role? Rolls-Royce created a corporate environmental function and I saw the opportunity that this provided – a global company with amazing products and diverse manufacturing processes, and associated environmental aspects and impacts to manage. It seemed like a perfect step having spent a few years auditing, which had been frustrating because the focus was on findings rather than solutions.

How did you progress your environment/sustainability career? By getting involved in emerging stakeholder requirements and thinking about more than just operational environmental issues. Taking part in external groups like the EEF, CBI, the aerospace industry trade body and selected cross-sector forums also required that I broaden my horizon and see what was happening in other sectors. Working with people from other sectors and firms makes you realise that, apart of some unique issues, you all have similar key impacts to manage.

What does your current role involve? Everything from operational EMSs to consultations on policy, new regulation, global standards, external reporting and end-of-life issues. A large part of what I do relates either to continual improvement (reducing both our environmental impact and our costs) or identifying and providing solutions to potential business continuity. As well as managing risks, Rolls-Royce is also looking at opportunities. I am a director on both the International Aerospace Environmental Group and Aircraft Fleet Recycling Association and use these positions to promote developments that will benefit the aero sector – this is an extremely rewarding part of my job.

Has your role changed over the past few years? Yes, there's been a need to be a lot more focused. Also, to work more collaboratively across the sector and to seek efficiencies and cost reduction as well as reducing environmental impact. There's also been a much greater focus on driving global solutions and being less parochial.

What's the best part of your work? Meeting people from other firms and parts of the world who have a shared passion for the environment. Being able to make a contribution and a difference in the sector. Seeing change implemented.

What's the hardest part of your job? Getting consensus and pace in delivery.

What was the last development event you attended? ISO 14001 revision, although I seem to spend more time as a presenter these days.

What did you bring back to your job? It's always a mix of new knowledge but often a confirmation that you're working along the right lines. It's always useful to see others' take on and approach to things.

What are the most important skills for your role? Communication is often at the heart of everything. You also need resilience and perseverance but at the end of the day it's being able to tell your story and get the messages across to the key decision makers around you.

Where do you see the profession going? Hopefully, from strength to strength. Without doubt there is an increasing demand for professionals who can respond to the current and future challenges that we will face around continued access to resources and finding ways of doing more with less – the old nugget of decoupling growth from the consumption of materials.

Where would like to be in five years' time? Quite possibly retired but I'll always have an interest in promoting the profession, especially as an ambassador for IEMA, and reflecting on the environmental impacts of my sector.

What advice would you give to someone entering the profession? Get as broad an experience as you can, both inside your own company and across your sector. Network as much as possible and take advantage of IEMA – it is the premier organisation in the world for the environment. Also develop your skills in communication and business case development as you need to sell a solution as well as find it!

How do you use IEMA's skills map? I frequently recommend it to other firms and I'm trying to see how we can include elements of it at Rolls-Royce and across the aero sector.

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.

Practitioner

Moosa Amin, Dubai Electricity and Water Authority
Isabel Armstrong, Brakes Group
Mahantesh Shivappa Baddi, Crown Bevcan Eur ME
David Bailey, Norbord
Simon Birtles, Walkers Snack Foods
Mark Bone, SITA UK
Tim Bird, Cormac Solutions
Adrian Buckland, Chesterfield Poultry
Richard Chappell, Routes to Work
Adam Cockayne, Schofield Lothian
Jennifer Collier, Laing O'Rourke
Paul Considine
Mark Cope, CBRE Global Workplace Solutions
Hannah Davies, HS2
Tim Dixon, Marine Management Organisation
Erin Fairley, Metropolis Planning & Design
John Fiddies, Fujitsu Services
Alice Fillan, Haymarket
Vicky Furgrove, Heineken UK
Kren Gomez, Arriva
Elsa Gregori, News UK and Ireland
Kimberley Grice, SITA UK
Audrey Halle, Dounreay Site Restoration
Stephanie Hands, Mott MacDonald
Lyn Henstridge, Carillion
Paul Higson, BASF
Richard Hill
Ross Hodson, Marine Management Organisation
Juha Huhtinen, ABB
Calum James, SITA UK
David Jones, Burtons Biscuits
Simon Jones, RES
David Keating, News UK and Ireland
Barry Joseph Kelly
Paul Kirk, Marine Management Organisation
Harry Knibb, Berkeley Group
Kevin Lewzey, IQA Group
Abbey Morris, South Warwickshire NHS Foundation Trust
Simon Nettel, SSE
Andrew Oakes, Mabeybridge
Anne O'Halloran, Fugro GEOS
Graeme Outridge, Biogen UK
Dominic Pybus, House of Commons
Peter Regan
Raza Sardar, Personal Hygiene Service
Deepika Swamy, HS2
Hari Krishna Thamarapalli, Saipem
John Thompson, SITA UK
David Waterston, Royal Mail Group
Thomas Watts, Ramboll Environ UK
Maggie Whitaker, Burtons Biscuits
Joseph Williams, Ministry of Defence
Sean Woods, Roadbridge
Jeff Wright, Cordell Group
Peter Wroe, Doosan Power Systems
Nicholas Wyley, CGI IT UK
Afua Yeboa-Henaku, City University, London
Katherine York, Centrica

Full and Chartered environmentalist

Matthew Brinklow, Laing O'Rourke
Jason Convey, VolkerHighways
Rowena Ekermawi, Ove Arup and Partners
Eleanor Glen, Ove Arup and Partners
Clair Elizabeth McCowlen, Global Action Plan
Clare McMahon, BUPA
Hani Nahawi, Mott MacDonald
Philippa Nabeeh, BP Global
Lucy Neville
Nafeezah Padamsey, Atkins
Nicholas Fekete Perez, Parkwood Consultancy Services
Richard Smith, BBC
Chris Streatfeild, Renewable UK Association

Fellow

Peter Fox, Environment Agency

IEMA events

Date	Region	Topic	
1 Sept	South East	Social (London)	
6 Sept	North West	Guided tour of Risley Moss nature reserve	
8 Sept	Wales	Integrating your transition to ISO 14001 and ISO 45001	
21 Sept	Wales	Social and Full/CEnv mentor forum	
Webinars			
25 Aug	The international perspective of ESIA		
External events			
7 Sept	Edinburgh	Infrastructure in Scotland	bit.ly/1I9DTR6
20–21 Sept	London	11th International Conference on Envirotech, Cleantech and Greentech	bit.ly/29Xr13V
21 Sept	London	Responsible retail conference	bit.ly/29QY4Vz
10 Oct	London	Climate change 2016	bit.ly/2a53uhR
12–13 Oct	London	Contamination EXPO Series 2016	contaminationexpo.com
18–20 Oct	Birmingham	Energy 2016	bit.ly/29G8IzW

nebosh

Grow your career

with NEBOSH Environmental qualifications

- NEBOSH Environmental Awareness at Work Qualification
- NEBOSH Certificate in Environmental Management
- NEBOSH National Diploma in Environmental Management
- University of Hull Masters degrees in partnership with NEBOSH

Our Certificate and Diploma environmental qualifications now meet the requirements for Associate and Practitioner membership of IEMA respectively.

Call 0116 263 4700, email environmental@nebosh.org.uk or visit www.nebosh.org.uk/qualifications to learn more