

TRANSFORM

Environment ●
Economy ●
Society ●

FOR ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS

February 2018
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Talking trash

Smart solutions for waste management

PLUS

Hitting the target Does the public understand the UN's SDGs?
Spoils of war Iraq's battle for recovery
City champion Leonie Cooper on the threats facing the capital

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FEBRUARY

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WEB EXCLUSIVE: Fugitive emissions

Rick Gould looks at ways to capture and accurately measure volatile emissions in the atmosphere at bit.ly/2F2SBsM

TIM BALCON, CEO OF IEMA

Turning plans into action

Finally, the UK government has published its 25-year plan for the environment. This has been a long time coming, so, now it's here, what do we think? Our view, as we told the nation's media the day the plan was launched, was that all the right touchpoints are there, but, without underpinning legislation and regulations, it is at risk of being toothless.

Whether or not you feel the plan hits the mark, it has already done a great job of getting people talking about the environment. The charges on single-use plastics, especially extending the 5p charge on plastic carrier bags to all retailers, has clearly been the hook. I think it's fair to say that BBC's recent broadcast of *Blue Planet II* has caught the public imagination – worldwide – flagging the perilous impact of plastics on the oceans.

Globally, the SDGs and the impact of COP23 – and, in the UK, the prime minister and Sir David Attenborough – have got people talking, opening the door to understanding that there is no trade-off between enhancing the environment, the economy and society. Without the environment, we have no economy and society won't exist. If people are finally starting to get that, it's time to mobilise. But, as we know, awareness is one thing; action is quite another

It is our responsibility to keep the plan's objectives high on the agenda. We must hold the government – all governments – to account, as we're the only ones who understand the complexity and urgency of delivering this kind of plan. It's also important that we push for the right legislation to support it. If that doesn't materialise, we must take the right strategic and practical action regardless; US businesses have done fantastic things despite president Trump's reckless withdrawal from the Paris Accord, showing that when the right people are in charge of departments and projects you'll always get the right outcome.

I have written to the UK environment secretary, Michael Gove, to congratulate him on the plan, and remind him of how IEMA members – our powerful, passionate network – are the people that can make this plan work for business, for society and for our planet.



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.

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ROUNDUP

ENVIRONMENT &
SUSTAINABILITY
NEWS AND VIEWS

GLOBAL WARMING

Coral bleaching now 'new normal'

The period of time between severe coral bleaching events around the world has decreased fivefold in the past three to four decades, scientists have warned.

A new study published in the journal *Science* reveals that such events occurred just once every 25-30 years in the early 1980s, but that warmer temperatures have seen this figure rise to once every six years.

It argues that severe and prolonged bleaching can cause many corals to die. It can then take at least a decade to replace these corals, threatening the existence of marine ecosystems and the livelihoods of millions.

"Before the 1980s, mass bleaching of corals was unheard of, even during strong El Niño conditions," says the lead author of the study, professor

Terry Hughes of James Cook University, Australia.

"But now repeated bouts of regional-scale bleaching and mass mortality of corals has become the new normal around the world as temperatures continue to rise."

More than a quarter of the world's fish biodiversity is associated with coral reefs, which provide spawning, nursery, breeding and feeding grounds for numerous organisms, despite covering just 0.1% of the ocean floor.

Bleaching is a stress response caused by exposure to elevated ocean temperatures, causing the coral to turn a stark white colour, with the recovery period increasingly shortening as a result of global warming.

The study establishes a transition from before the 1980s, when bleaching only occurred locally, to an intermediate stage in the 1980s and 1990s, when mass

bleaching was first recorded during warmer than average El Niño conditions.

However, this is now occurring much more frequently, with the research showing that tropical sea temperatures are warmer today during traditionally cooler periods than they were during hotter ones 40 years ago.

This is reflected in the Great Barrier Reef becoming bleached four times since 1998, including the first back-to-back events in 2016 and 2017.

"Reefs have entered a distinctive human-dominated era – the Anthropocene," says the study's co-author, Dr Mark Eakin of the National Oceanic and Atmospheric Administration in the US.

"The climate has warmed rapidly in the past 50 years, first making El Niños dangerous for corals, and now we're seeing the emergence of bleaching in every hot summer."



SHORTCUTS

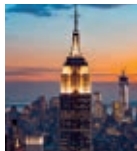


EU outlines plastic waste vision

The EU has announced that all plastic packaging on the continent will be recyclable by 2030 as part of a transition towards a more circular economy.

Single-use plastics will be reduced, and intentional use of microplastics restricted, with the hope that changing the way products are designed, produced and used will create new investment and jobs.

European Commission first vice-president Frans Timmermans said: "If we don't change the way we produce and use plastics, there will be more plastics than fish in our oceans by 2050."



New York sues firms for climate change

New York City has filed a lawsuit

against the five largest investor-owned fossil fuel companies in the world as measured by their contributions to global warming.

It has also announced that the city's \$189bn (£137bn) pension funds will divest the \$5bn they hold in securities in over 190 fossil fuel companies within five years.

Mayor Bill de Blasio said: "We're bringing the fight against climate change straight to the fossil fuel companies that knew about its effects and intentionally misled the public to protect their profits."



UK university turns campus into smart energy lab

Keele University will turn its campus

into the largest living laboratory for integrated smart electricity, gas and heating technologies in the world.

It will be the first such facility in Europe and include the digitalisation of 24 substations, the installation of over 1,500 smart meters, 500 home controllers and a 5MW renewable integration package.

REFORESTATION

China battles pollution with forest the size of Ireland

China has announced plans for a "massive greening campaign" that will include planting 6.6m hectares of forest this year – an area almost the size of Ireland.

The State Forestry Administration of the People's Republic of China said the country would increase its forest coverage from 21.6% to 26% by 2035 as part of a modernisation blueprint to strengthen its fragile ecology.

In the past five years, an area of 33.8m hectares has already been grown nationwide, more than in any other country, with over ¥538bn (£61bn) spent on reforestation.

"Companies, organisations and talent that specialise in greening work are all welcome to join in the country's massive

greening campaign," said State Forestry Administration head Zhang Jianlong.

The plans come four years after China announced a "war on pollution", with forest expansion and the cleaning of rivers becoming increasingly important as it attempts to shed its polluting image.

Phase one will involve expanding forest coverage from 21.6% to 23.04% by 2020, with the volume of forest stock growing from 15.137bn cubic meters to 16.5bn. This will rise to 21bn cubic meters by 2035, with forest coverage increasing to 26%, while the greening rate in rural areas will grow from 30% to 38%, reaching 43% by 2050.

The new forest areas will be built in the north-east Hebei province, the Qinghai province in the Tibetan Plateau and in the Hunshandake Desert in Inner Mongolia.

DISCLOSURE

UK jewellers still fail reporting standards

The UK jewellery industry continues to risk facilitating conflict, environmental damage and worker exploitation across the world, according to a study of eight top jewellers by Ardea International.

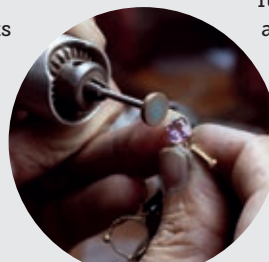
It reveals that just three of these companies fully meet the disclosure requirements of the 2015 Modern Slavery Act, while half do not have a modern slavery statement on their website's homepage.

The study also highlights the limitations of other regulatory schemes designed to prevent the

introduction of 'blood diamonds' to the market, and mitigate the impact of mining on communities, the environment and forced labour.

In response, jewellers are being urged to ensure their supply chains are properly mapped and audited, with a report from Ardea International saying companies must go "above and beyond" regulatory requirements.

"It is crucial [they] acknowledge and address the risks of modern slavery in their supply chains to take effective action," it says.





IEMA IN THE NEWS

Code of practice review

As part of IEMA's ongoing mission to develop the profession, the membership code of practice is set to be reviewed, and members will have the opportunity to get involved in reshaping it.

Head of professional standards Claire Kirk, who will lead the review with IEMA's Professional Standards Committee, said that over the coming months she will seek feedback and input from members to "bring the code to life".

"The code of practice is what we are all professionally held accountable to, so it's essential that it is shaped by those who will use and refer to it," said Kirk.

"We'll want to know how, and if, you've used the existing code of practice, examples of where your professional and ethical code have been tested, and what standard of professional and ethical conduct you expect of yourself and your peers to make sure it's robust and future-fit," she continued.

➤ **Please look out for opportunities to get involved in the review very soon**



SUSTAINABILITY

Guidance needed to 'join the dots' between SDGs and practice

A gap between 'big-picture' international development objectives and grass roots sustainability practice must be bridged to ensure skilled professionals, organisations and nations can contribute to the United Nations' sustainable development goals (SDGs), said IEMA's CEO in December.

Tim Balcon said that professionals need more practical advice to steer their organisations.

"There is no doubt that the SDGs provide absolute focus on creating a peaceful and prosperous planet. Their targets need to be on a par with the Paris Accord in terms of stimulating collaboration and directing organisational focus on improving environment and sustainability performance," said Balcon. "However, with the goals' deadline just over 12

years away, we must ensure that we join the dots between strategic vision and practice now. That means ensuring professionals everywhere can access support and guidance to make the right day-to-day decisions, which align with big-picture direction," he continued.

IEMA says that collaboration between professions to exchange practical expertise on a circular economy, responsible finance, ethical procurement, employment law, communications, biodiversity and change management is essential.

It recently published *Change Management for Sustainable Development*, the first in a new Sustainability in Practice series.

➤ **Download free at www.iema.net/cmsd or buy the book for £15 (£25 non-members) at www.iema.net/iema-shop**

SURVEY

What's the state of the profession? You've had your say

IEMA's annual research into how the environment and sustainability profession is progressing closed last month, and members will see the results in March.

1,053 members took part in the 2017/18 State of the Profession survey between its launch on 20 December and its close on 12 January. Members were asked to give anonymous details of their employment, job satisfaction, achievements, earnings, bonuses and job changes during 2017,

as well as their views on what challenges they will face personally in 2018 and those awaiting the profession.

Early analysis shows that employment rates remain high, as do the number of members with graduate or postgraduate qualifications. The number of members who had a pay rise in 2017 is up on the previous year along with earnings through bonuses, overtime or commission. Perfecting work-life balance is now the

biggest professional challenge. But the percentage of members who say they are satisfied or very satisfied with their role remains the same as last year.

A full report will be published in the March issue of TRANSFORM, and members will also see statistics from the survey in the media throughout the year.

IEMA would like to thank all respondents for their contribution.



PUBLICATIONS

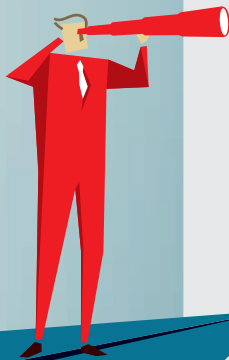
New guidance available free for members

As part of IEMA's ongoing commitment to providing a wide range of current and practical guidance at all career stages, two new free downloads for Student and Graduate members were published in January.

Written by Fellow member Paul Reeve, *Sustainability: Engaging with Drivers for Change* and *Engaging with Sustainable Development* are free for all members but are especially useful for those at the start of their membership journey.

Both articles focus on key elements of implementing sustainability, where engagement and change management are critically important. They look at key drivers, principles and practice behind sustainable development and corporate responsibility as an integral way to achieve positive economic, social and environmental transformation.

Both downloads are available from iema.net. Non-members can buy the articles for £10 each from www.iema.net/iema-shop



MEMBERSHIP

More new Fellows named

The IEMA Fellows Network further grew in scale and influence during December and January, with the addition of 15 new FIEMAs.

IEMA is delighted to award Fellow membership to these leaders:

- Anne Miller – Oxford University
- Ben Cave – Ben Cave Associates Ltd
- Craig Simmons – Anthesis Consulting Group
- Debbie Cousins – European Bank for Reconstruction and Development (EBRD)
- Ed Mitchell – Pennon Group PLC
- Einir Young – Bangor University
- Harvey Bradshaw – Environment Agency
- Ivor Robinich – Planning Authority (Malta)
- John Hill – John Hill Associates
- Jonathan Ben-Ami – Ove Arup and Partners Ltd
- Kirit Patel – DHL Supply Chain
- Matthew Prescott – Iken Associates
- Paul Stookes – Richard Buxton
- Peter Miller – HS2 Ltd
- Shamir Ghumra – Centre for Sustainable Products, BRE.

Find out more about Fellow membership and how to apply or nominate at www.iema.net/membership/fellow-membership/

FEES

2018 membership fees confirmed

The full list of all joining, renewal and upgrade fees for 2018-2019 can now be found on the IEMA website.

Fees are reviewed each year to ensure continued support and investment in membership services, benefits and opportunities.

From 1 March, the price list for all renewals is as follows:

- Student – £25
- Affiliate – £123
- Graduate – £125
- Associate – £130
- Practitioner – £160
- Full – £175

- Full Member with Chartered Environmentalist – £229
- Fellow – £200
- Fellow with Chartered Environmentalist – £254
- Retired – £52

Members who have a March renewal date have already been advised of their 2018 fee.

For a full list of joining and upgrade fees, plus all Specialist Register and Chartered Environmentalist administration and VAT costs – as well as FAQs about costs associated with membership – visit www.iema.net/membership/fees-2018



GET IN TOUCH!

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POINTS OF VIEW

At the end of 2017, just as the fourth issue of TRANSFORM was published, a new group of members assembled to review the new look, direction, attitude and format of the magazine.

Formed to ensure that the magazine interests, informs, serves and celebrates the IEMA membership, the editorial advisory board (EAB) met for the first time on 1 December. Along with editor Sharon Maguire and IEMA's head of PR and communications, Katrina Pierce, the 11 members of the EAB discussed the impact and future of the new magazine; essentially, what works well, which areas should be enhanced or extended, and what could potentially be phased out as the title develops.

The general view on the new magazine is that it is a clear improvement on *the environmentalist*, which was itself rated very positively by members. The EAB praised the new "snappier, punchier" and bold style and tone of articles, which help busy IEMA members to quickly get to grips with all the right news and updates.

The Big Question debates and Big Interviews with people such as Jonathan Bartley, co-leader of the UK's Green Party, and sustainability expert

Dina Hasan Al Nahdy were also positively

reviewed.

The use of quotes, infographics and images throughout the magazine seem to be working well, as board members were enthusiastic about the

"clean and crisp" layout. There were mixed views on some visual elements such as the Big Picture, included in the centre of every issue. Many members of the group see it as an important "pause point" in the magazine, which gives the chance to get an unusual pictorial update on serious ecological and societal issues; others felt the two pages could be put to better use, perhaps for a case study or how-to guide.

Feedback on the spread of content from the first four issues was largely positive. However, some areas – such as impact assessment and environmental management, which were felt to be served very well by *the environmentalist* – need to feature far more prominently in 2018. As a caveat, the group did say they appreciate that it is difficult for one magazine to cover the full breadth of issues and specialisms that interest the entire IEMA membership.

The board urged IEMA and the editorial team to feature content that appeals to a wider, international audience of members, and to look at issues surrounding global supply chains and new practice outside the UK, and contributed some excellent ideas. Also discussed was the option of moving the magazine towards a sustainable digital format. Some were in favour, while others felt the print magazine was a valuable marketing tool to attract new members.

IEMA and the TRANSFORM editorial team are now working to introduce some developments recommended by the EAB ahead of the next meeting in April.

If you have any feedback on TRANSFORM, please email editor Sharon Maguire (sharon.maguire@redactive.co.uk) or IEMA's Katrina Pierce (k.pierce@iema.net).



MEET THE TEAM

TRANSFORM's editorial advisory board

- **Kirit Patel** – environment manager, DHL Supply Chain
- **Clare Topping** – energy and sustainability manager, Northampton General Hospital
- **Sandra Norval** – managing director, Catalicity
- **Katie Atherton** – environmental advisor, John Robson
- **Mike Lachowicz** – director, Panagaea Consulting Limited
- **Phil Cumming** – senior sustainability manager, Marks and Spencer Plc
- **Adrian Barnes** – vice-president, sustainable finance, UK Green Investment Bank
- **Andy Nolan** – director of sustainability, Nottingham University
- **Jae Mather** – executive director, Clean Energy Association of British Columbia
- **Georgina Stickles** – environmental sustainability manager, United Nations World Food Programme
- **Josh Fothergill** – director, Fothergill Training & Consulting Ltd



NEW REGULATIONS

THE LATEST

■ GUIDANCE ■ CONSULTATIONS ■ LEGISLATION

**1 JANUARY 2018**

Marine pollution

The Environmental Protection (Microbeads) (England) Regulations 2017 ban rinse-off personal care products containing microbeads to help reduce the release of plastic into the marine environment and reduce harm to marine organisms.

➤ cedr.ec/4q1

**11 DECEMBER 2017**

Energy efficiency

The Department for Communities and Local Government has updated guidance on Energy Performance Certificates for the construction, sale and let of non-dwellings and dwellings.

➤ cedr.ec/4pm
➤ cedr.ec/4pn

**1 NOVEMBER 2017**

Water pollution

Guidance for Pollution Prevention (GPP4) helps owners and developers of domestic and non-domestic properties generating domestic-like wastewater who are not connected to a public foul sewer. It focusses on water treatment and disposal.

➤ cedr.ec/4po

**15 DECEMBER 2017**

Marine pollution

The European Commission is seeking views on the introduction of measures to tackle marine plastic pollution, mostly from single-use items, such as bottles, cigarette buds, packets, as well as discarded or lost fishing gear.

➤ cedr.ec/4pq

**27 DECEMBER 2017**

Emissions trading

The Greenhouse Gas Emissions Trading Scheme (Amendment) Regulations 2017 change the EU Emissions Trading Scheme 2018 compliance deadlines for stationary installations and aviation operators regulated by the UK to 2019 before the UK will leave the EU.

➤ cedr.ec/4pv

**1 JANUARY 2018**

Water environment

The Water Environment (Miscellaneous) (Scotland) Regulations 2017 amend Schedule 3 to the 2011 Regulations, with new rules for storage of liquid fertilisers, sewage sludge, digestate and oil.

➤ cedr.ec/4ps

**1 JANUARY 2018**

Ionising radiation

The Ionising Radiations Regulations 2017 and the Ionising Radiations Regulations (Northern Ireland) 2017 replace the existing regime for workplaces, with new provisions for notifying work and permitted dose limits for exposure to the lens of the eye.

➤ cedr.ec/4pt

**1 JANUARY 2018**

Packaging waste

The Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations 2017 and the Northern Ireland version update the packaging waste recycling targets for glass, plastic, aluminium, steel, paper and wood.

➤ cedr.ec/4q6

INCOURT

POLLUTION

Harron Homes fined £120,000 for water pollution

Harron Homes, a housing company based in Leeds, has been fined £120,000 for illegally polluting a watercourse.

The pollution originated from a construction site in Huddersfield, where contaminated run-off had entered a tributary of Grimescar Dyke.

The breach was discovered by a visiting officer for the Environment Agency, who noticed polluted water flowing from the entrance of the construction site. It was also found that the company was pumping silt-contaminated water from the site excavations, which also entered the watercourse.

Harron Homes reacted to those findings by setting up settlement tanks. These systems proved to be inadequate, however, with more pollution incidences occurring in November and December of 2015.

Samples taken from the discharges showed that they were having a significant impact

on the water quality in the watercourse up to three kilometres further downstream.

Some samples showed that there were nearly 35,000 milligrams of suspended solids per litre of water, whereas a healthy watercourse is expected to have a concentration lower than 30 milligrams of suspended solids per litre.

Mark West, environment management team leader at the Environment Agency, commented that: "These pollution incidents had a significant impact on the water environment over a number of weeks, and were entirely avoidable."

He added that: "In West Yorkshire there has been a worrying increase in the number of pollutions incidents reported to us that, on investigation, are attributable to the construction sector."

In mitigation, Harron Homes told the court that it had now put procedures in place to prevent future pollution incidents.



◆ Pollution incidents were 'entirely avoidable'

OTHER NEWS

UK ratifies agreement to tackle global warming

The UK has become one of the first nations to ratify a landmark amendment to the Montreal Protocol on reducing emissions of hydrofluorocarbon greenhouse gases (HFCs), mostly found in refrigeration systems and air-conditioning.

The Kigali Amendment aims to reduce emissions of HFCs by 85% between 2019 and 2036 to help to control global warming and keep the average temperature increase less than 2 degrees above pre-industrial levels.

Although HFCs do not deplete the ozone layer, their potential to cause global warming if released into the atmosphere is thousands of times greater than carbon dioxide.

The successful implementation of the Montreal Protocol, which helped to reduce emissions of substances that deplete the ozone layer by phasing out 98% of them, pushed for further action to implement a similar strategy to tackle global warming. This is now starting to be internationally implemented through the Kigali Amendment.

"Adopting this ambitious target marks the UK as a world leader in tackling climate change," said UK environment secretary Michael Gove. "This deal will reduce global greenhouse gas emissions by the equivalent of around 70 billion tonnes of carbon dioxide by 2050 – the same as more than 600 coal-fired power stations would produce during that time."

"The UK, along with the rest of the EU, has already begun to phase down HFCs by 79% between 2015 and 2030. The Montreal Protocol will result in an additional UK reduction equivalent to around 44 million tonnes of carbon dioxide."



CASE LAW

Wind turbine planning appeal dismissed

An attempt to secure planning permission for a wind turbine for which permission had previously been overturned on appeal has been dismissed by the Court of Appeal.

Permission for the wind turbine had been granted by the local authority on the grounds that the energy supplied would fulfil the demand from the local community. In addition to the energy, the developers also pledged to donate 4% of the

annual turnover from the turbine to the local community fund.

This pledge was taken into account by the local authority, which, when the permission was challenged in an appeal, was found to be unlawful. This is because the challenger, who was a local resident, argued successfully that the donation was not a "material planning condition" and therefore not applicable for consideration.

In order to be a material planning condition, the condition had to relate fairly to the development in question and have a planning purpose.

The community fund did not satisfy those requirements and as a result the permission was quashed.

This latest ruling has dismissed the appeal lodged by the developers and the local authority against that decision.

In focus



NATURAL WORLD

Tide is turning for turtles

A study published in the latest issue of *Current Biology* has found that green sea turtles born in areas of heated water and sand around Australia's Great Barrier Reef are 99.8% female. In turtle biology, different temperatures dictate their sex, with cooler temperatures producing more male hatchlings and warmer areas producing more females. The change in sea and sand temperature is thought to be a consequence of climate change.

It is not yet clear how the extreme sex ratio will affect sea turtles' future, but there are concerns that this could create something of a time bomb.

Michael Jensen, the study's lead author, said: "What happens in 20 years' time when there are no more males reaching adulthood? Will there be enough breeding males to sustain the population?" 

PHOTOGRAPHY: GETTY

Green City CHAMPION

Amid growing concern over London's illegal air pollution levels, an assault on its green belt and an escalating housing crisis, Labour politician **Leonie Cooper** speaks to Chris Seekings about environmental threats facing the capital

As chair of the London Assembly Environment Committee, Leonie Cooper is charged with ensuring mayor Sadiq Khan does not lose sight of the important environmental challenges facing the city amid Brexit uncertainty. She is actively shaping the capital's environmental agenda, providing many of the recommendations in the 2017 draft London Environment Strategy, with a final version due this year.

After hearing Cooper give a speech at her offices in City Hall, I catch up with the influential politician for a discussion about the environmental issues facing London, hoping to gain an insight into how these challenges are being tackled.

She starts off by expressing pride at seeing her proposals included in the strategy, particularly those to increase biodiversity through expansion of green spaces. However, with approximately 47% of London already classified as a green space, I ask why this is such an important issue

to her? "Well, a number of green spaces have been left fallow for many years, and a lot of the space is private," she explains. "There is no point having 'green jewels' that have a lot of money put into them, like Richmond or Hyde Park, if other spaces are left to deteriorate."

The mayor wants London to become the world's first 'national park city', increasing the amount of green spaces in the capital to 50%. However, Cooper warns this is likely to prove particularly difficult, owing to cuts to local authority budgets and the number of green spaces that are already planned to be built on.

"It is absolutely critical that we try to increase green space, and baseline our wide diversity of fauna and flora," Cooper says. "Without a structured approach, the chance of losing it is very strong."

Other features of the draft strategy include the development of green roofs and walls, with plants, grass, trees and rain gardens incorporated in new developments using a new 'urban greening factor' – another of Cooper's recommendations. On the back of her suggestion for a 'green champion' for London, the draft strategy takes the

idea further by introducing a whole committee to ensure green spaces are not rolled back. "You have to think really hard about how you incorporate green space, not only in a specific site but how you join that with the surrounding area,"

Cooper explains. "As we build more structures, we must make a conscious effort to keep nature in."



Zero-carbon city

Although the draft strategy has received much praise, Cooper stresses that one of the biggest challenges facing London will be improving air pollution if it is to become a zero-carbon city by 2050. A report released by the London Assembly last year revealed that 95% of people living in the capital inhabit an area that exceeds World Health Organization guidelines for toxic air particles; a problem that is responsible for 29,000 premature deaths in the UK every year. An emissions surcharge on the most polluting petrol and diesel vehicles – the T-charge – has since been introduced in the city, while funding for tackling air quality is set to double to £875m in the next five years.

Cooper enthuses about further "exciting" plans, such as a move away from private vehicle ownership towards high-quality mass transit transport systems, with active travel very much emphasised.

However, she believes air quality will only be addressed with improvements to buses and planes, cooperation from Heathrow, and support from the government, which has so far "not really been on the same page".

"I understand why – they seem to be completely distracted with Brexit at the moment, to the point that it seems like the rest of the world doesn't exist," she says. "But we can't wait for years of negotiations to finish; people are really struggling with poor air quality now and we have to get on with it."

Cooper admits a transition to a zero-carbon economy will require a lot of change, and that scaling the use of renewable energy will be key to this. ➤

Interview

➤ Circular economy: Cooper doesn't like the term, but believes it is the key to sustainability

Although praising the government's efforts to cut back on coal use, she has serious concerns about its approach to fracking and nuclear energy. "They seem to be allergic to the idea of wind farms, which I think is just ridiculous," she exclaims. "We are an island, and there is plenty of wind that comes our way."

It is perhaps unsurprising that the government comes in for much criticism, with Cooper also lamenting reductions to the solar power feed-in tariffs and renewable heat incentive, and the disbanding of the Department of Energy and Climate Change. However, she adds: "Even non-Labour politicians like former Conservative cabinet minister Lord Deben have been very critical about our failure to move ahead with some of these things – I really hope the government starts to move forward."

Unsustainable supply

As well as chairing the Environment Committee, Cooper is also a member of the Housing Committee, and has worked as a sustainability manager for a large housing group. Figures from charity Shelter reveal average house prices in England are now almost seven times what most people can afford, with more than 2,000 people sleeping rough every year.

This is at the heart of the housing crisis in London, according to Cooper, who says there has been insufficient housing at certain prices, particularly at the low-cost end. "So lots of people have ended up in the private rental sector, and landlords have rubbed their hands and put up the rents," she explains. "The reason we have a housing crisis is, in simple terms, a lack of supply."

Cooper goes on to cite various statistics, one being that just 3% of people under 40 are currently buying houses. "It is a phenomenal figure that is ridiculously low," she says. "We need to ramp up a huge housebuilding programme – but you can't do that overnight – the mayor said it was going to be a marathon, not a sprint, and he is right."

Some commentators have suggested cutting immigration could help stem housing demand in London, but Cooper is keen to point out that the housing crisis took root before Britain opened up its borders to Eastern European migrants in 2004. "Cutting immigration may have a small effect at the margins, but it is not the cause of the crisis," she continued. "So it is irrelevant really – it is a demographic change that has made a big difference, along with families breaking up and people living longer."

She is also keen to stress that building on the green belt would be "an enormous mistake". The London Chamber of Commerce and Industry said at the end of 2017 that it had identified poor-quality areas of undeveloped land on the green belt, equivalent to 500 football pitches, with the potential for some 20,000 homes.

However, Cooper continued: "If every single brownfield site had definitely gone then I might consider looking at some of the really dreadful bits of the greenbelt – but that isn't going to happen for year and years, so we don't need to."



Waste not, want not

One of the key features of the changing environmental landscape in London should be a transition to a circular economy, according to Cooper, with a report from her committee revealing that the capital could cut its waste by 60% if it adopted these principles. Doing so could also provide £7bn to London's economy, creating 12,000 new jobs by 2030.

She argues that the current waste management model is unsustainable. "If the population of London is going to increase from 8.8 million to 10, 11 or 12 million, we have to stop living in a way in which we buy something then throw it in the dustbin, before it is cast away, stuck in the ground or burnt," Cooper says.

She outlines how this will involve large corporations like eBay allowing people to share products they no longer want online, and thus extending lifecycles. However, Cooper stresses that this is also an opportunity for small businesses to exploit.

One of the biggest obstacles to extracting the maximum value from products is London's recycling rates, Cooper explains. Her report reveals that recycling levels have fallen back to those of 2010, while a separate study by waste management company Viridor reveals that just 43% of people in the UK are confident that they put their rubbish in the right bins.

Cooper says that a lack of standardisation has contributed to this, with various recycling methods across different boroughs:

"Can you imagine what a nightmare it would be if, every time you crossed a borough boundary, the traffic lights meant something different?"

She is actually not a fan of the term 'circular economy', suggesting that most people have no idea what it means. "We are asking people to change their behaviour, and the best way to do that is to make it easy for people to understand," she adds. Despite these challenges, Cooper says there is a vision for improving sustainability, health, biodiversity and prosperity that encompasses transport, energy and housing. However, there is a reminder that this is all being implemented

against a backdrop of economic uncertainty surrounding Brexit, as well as the ongoing security challenges facing the city, with the mayor also responsible for the police force and fire brigade.

"Unfortunately, these challenges are having to be addressed against quite a difficult background," she continues. "But I am optimistic for London, and we have thought very hard about how to deliver on the environment. It's not like we have another earth in our back pocket." 🌱

It is absolutely critical that we try to increase green space and protect our diversity of fauna and flora

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Imagine a world where self-driving trucks collect your waste only when bins are full – city-wide routes would be optimised, traffic reduced, emissions cut and money saved. Now imagine that you are then sent an instant message with your personal recycling record – including a pat on the back and a council tax discount if you've upped your game, or a scolding and a higher bill if you've let things slide. And there's no excuse for contamination, because you can use the smartphone app to scan packaging so you know exactly which bin to use.

This might seem fanciful, but it's closer to reality than you might think. "The emergence of the internet of things and 'smartcities' means that rubbish collections will become automated and more efficient," noted experts in 'From Waste to Resource Productivity', a report published by the Government Office for Science in December 2017.

It highlighted work being done by Swedish recycling firm Renova and Volvo to develop a robot refuse truck guided by an autonomous drone that automatically collects and empties bins kitted out with sensors. But that's not the half of it: once data is being collected from bins, the systems become even more efficient, predicting waste generation rather than

merely responding to it. These so-called smartbins could, for example, give real-time data on content and fill status, offering councils and waste contractors the chance to design more resource-efficient collection systems, as well as smarter forms of materials collection.

Again, this is already happening. In Dublin airport, for example, there are 300 new bins with wireless, ultrasonic, fill-level sensors that feed into a cloud-based monitoring and analytics platform. This means the team can map and monitor the airport's waste by the minute, which has had a significant impact on costs: instead of collecting 840 bins four times a day, it's now just 80 a day. They have also used the system, designed by Korean company Ecube Labs, to predict peak times, so they can deploy staff accordingly and keep a close eye on recycling rates.

These days, data is everything. As Viktor Mayer-Schönberger and Kenneth Cukier, authors of *Big Data: A Revolution that Will Transform how We Live, Work, and Think*, put it: "Once we 'datafy' things, we can transform their purpose and turn the information into new forms of value." But what's the appetite for applying this technological revolution (the fourth industrial revolution), with its data, artificial intelligence and 3D printers, to the waste management sector?

The International Solid Waste Association (ISWA) recently tried to



New binrastructure

David Burrows looks at how technology is transforming the waste sector



Waste management

find out. A global survey of 1,000 of its members showed that 50% think it will have a major impact on their businesses come 2030 – by which time 62% also believe there will be chatbots to help people better manage their waste. Four in five also predict there will be fully robotic waste sorting within the next 12 years, and more than one in three (38%) think waste will be collected by robots.

ISWA suggests the results show the waste management community is aware of change coming but underestimating how fast it will happen. In the eight months it took to complete the report, the first driverless waste collection experiment was successfully completed, 3D printers were used (experimentally) for the management of recycled plastics and more smartbins were launched.

Reflecting on some of ISWA's findings, Karl Vrancken, an expert at cleantech and sustainable research firm Vito and professor in the bio-engineering department at the University of Antwerp, says the waste sector is "clearly aware" of the changes ahead, with sensors and robots expected to revolutionise waste sorting and recycling. "But, in order to drive and allow this impact, development and investment in big data and artificial intelligence is necessary," he explains. "This is not yet in the comfort zone of the waste sector."

It's easy to see why. The waste management sector has come a long way in the past decade, with many businesses rebranding as resource companies reflecting that they don't just bury everything in holes in the ground anymore. However, it remains a conservative industry, dealing in low-value materials on tight margins. Councils have also been pummelled by the treasury's austerity stick, so rolling out a new wave of high-tech bins across a city to encourage recycling on the go isn't likely to be a priority.

But should it be? "The biggest issue is mindset," says Giles Bailey, managing director at Stratageeb, a strategic innovation company based in London. "Waste is an important industry and a very expensive service for local authorities, so, by not focusing on innovation, they are missing out on a major opportunity." The fact that councils and contractors may not have any idea if a bin is full until they pass by is "so last century", he adds.

But councils are removing street bins rather than putting more in – contamination is high and so are maintenance costs. According to a survey of 100 UK local authorities published in

December by plastics recycling charity RECOUP, the cost versus benefit of new 'binfrastructure' just doesn't add up – despite the fact that councils spend an annual £1bn cleaning up the 2.25m pieces

of litter dropped every year.

The government is under pressure to do more. A deposit return scheme for plastic bottles, for instance, will reduce litter and boost recycling, say campaigners. Last month, the Commons Environmental Audit Committee (EAC) also called for the introduction of a 25p charge on disposable coffee cups. The MPs said the 'latte levy' would encourage people to buy reusable cups – 2.5bn single-use cups are used every year, of which only 1 in 400 are recycled, and 0.5m a day are littered.

Critically, the revenue generated could be invested in new street bins and infrastructure, which town halls would welcome. As Lee Marshall, chief executive of the Local Authority Recycling Advisory Committee, told the EAC: "Few local authorities have on-the-go recycling schemes, and, in the ones that do, the quality of material they get is very poor."

Could technology help? Cambridge Consultants has

been combining machine vision with machine learning to develop bins that can be 'trained' to recognise new items over time – for example, the difference between a recyclable coffee cup and a compostable one – and thus reduce contamination levels. Rather than smart-tech, it's actually quite simple, says Catherine Joce, who has been working on the project, although there's a fair way to go before it could cope with all the items thrown at it in a high street. Joce can't see cash-strapped councils investing just yet, but the technology is improving rapidly.

The concept could work well in a semi-closed environment like a store, shopping centre or a stadium, though. The likes of Starbucks, Costa and McDonald's could offer loyalty points or vouchers for customers who put their cup or burger bag in the right bin, and keep track of their progress over time: "Thanks for helping to save Xg of carbon and recycle Xg of packaging in the past three months." The customer feels good and the company shows it is operating responsibly.

Technology could certainly be a neat way to engage the public, especially since recycling rates continue to stagnate and contamination levels remain high. But what about privacy issues?

People are used to giving brands their personal data, but they are less willing to have smartbins at home. Councils started putting microchips in bins around 2002 in order to look at the potential for charging for waste collections by weight and incentivising recycling. However, the concept died away, thanks to stories of increased fly-tipping and local authorities spying on residents.

Bailey says he can't believe that in 2018, we don't know how much we recycle every week, or how that compares to the rest of the area. He says it needs to be made clear why the technology is being put in the bins and how it will help people. "If I am not using the bins and not chucking away as much and it's cheaper, then I'm happy."

That sounds like a smart idea. 

Contractors not
having any idea
if a bin is full
until they pass by
is so last century



The spoils of war

David Wells explains Iraq's battle to recover from conflict and severe environmental damage

Iraq has had a turbulent recent history and is characterised by social and political instability. This was not always the case; in the 1960s and 70s, increased oil revenues, strong economic growth and social reforms gave Iraq significant economic power. But during the past four decades, the country has suffered a severe breakdown in social, political and infrastructure dynamics, and now faces major environmental and socio-economic issues.

The Iran-Iraq War (1980-1988), Gulf War (1990-1991), 2003 invasion of Iraq and the recent occupation of large swathes of Iraq by Islamic State (IS) have resulted in infrastructure damage, environmental degradation, looting and pillaging of equipment and supplies (including hazardous and radioactive materials) and acts of sabotage.

Furthermore, the financial and trade embargo imposed by the United Nations

following Iraq's 1990 Kuwait invasion severely curbed funds for maintenance, waste management and environmental remediation. Many skilled engineers fled the country, which resulted in a lack of expertise in pollution prevention techniques and best practice and an absence of effective regulatory controls.

The huge Iraqi oil industry was starved of investment, skills and technology, leading to chronic environmental problems, such as discharges of untreated effluent to surface waters, spillages and discharges of chemicals to soils and groundwater, widespread uncontrolled emissions and poor waste management.

Many of Iraq's water resources originate outside its borders, and strained relations with those countries mean they are continually diverted or inhibited. As a result, Iraq has major water security challenges, although this is not a new crisis, thanks to decades of ineffective management of water resources.

Iraq's political stalemate, population growth, failure to plan and coordinate water issues with neighbours, as well as climate change, drought and wasteful irrigation, have all added to stresses on water security. With depleted aquifers and limited rainfall, Iraq's dependence on the Tigris and Euphrates rivers has increased its vulnerability to water scarcity.

Quality is as much a problem as quantity, with few suitable wastewater treatment facilities. Fertilisers and pesticides leach into surface watercourses along with untreated domestic, hospital and industrial effluents. Salinisation of both soils and surface water resources from recirculation of agricultural drainage is also causing problems.

Iraq also has one of the highest fertility rates in the world, with a growth rate of 2.5%, and 40% of the population are under 15 years old. This puts extreme pressure on inadequate utilities. With few waste management facilities, much is buried, burnt or simply dumped, resulting in uncontrolled waste deposits.

The combined effect of environmental and social pressures leaves Iraq with a colossal task of remediation. In the eight years since Earth & Marine Environmental Consultants started working there, faltering progress has been observed. However, the decline in oil prices and upheaval caused by IS has taken the momentum out of these small gains.

There is much work to be done, with increasing urgency. It is not a place for the faint-hearted. UK firms are playing a key role in this effort, requiring a huge range of complimentary disciplines. 

DAVID WELLS is technical director, Iraq projects, at Earth & Marine Environmental Consultants



Reporting standards

The heightened emphasis on transparency and accountability through corporate governance and disclosure has renewed the focus on the 'triple bottom line' – environmental, social and governance (ESG) performance. Meanwhile, mandatory and non-financial reporting are converging. Companies are increasingly required by regulation – such as the 2013 reform of the Companies Act 2006, and the UK Modern Slavery Act 2015 – to report on environmental and social issues.

The Financial Reporting Council has published its annual Corporate Reporting Review for 2016/17. It highlights that expectations of corporate reporting are rising, flagging up two areas. First, companies are required to be more transparent about relationships with employees, customers, suppliers and stakeholders, and how they engage with them to ensure long-term success. Second, companies need to be explicit about how they generate and preserve values.

What is sustainability reporting?

International standards body the Global Reporting Initiative (GRI) describes a sustainability report as one published by an organisation about "the economic, environmental and social impacts caused by its everyday activities". It will also present the organisation's values and governance model, and "demonstrate the link between its strategy and its commitment to a sustainable global economy".

Why do companies report?

Companies choose to report on environmental and social issues for numerous reasons – perhaps to reflect their corporate social responsibility (CSR) commitments or to show good business practice.

It is a driver for improved performance. They may want to join an ethical index, or shareholders or investors may be pressing for more transparency on ESG performance.

What are the trends in reporting?

The 2016 Carrots & Sticks report, produced by KPMG, GRI, the United Nations Environment Programme and The Centre for Corporate Governance in Africa, shows that there has been a 65% increase in mandatory reporting from 2013-2016. Use of voluntary reporting instruments has also risen by 35%. In many OECD countries, early voluntary efforts to measure and report on CSR or sustainability performance have been followed by mandatory disclosure requirements.

Voluntary reporting frameworks

There is a growing number of voluntary reporting frameworks that companies can adopt. The most common and widely adopted global voluntary framework for sustainability reporting is GRI. Other key frameworks for reporting on



Held to account

Colleen Theron gives an overview of mandatory and voluntary sustainability reporting

non-financial matters include: the International Integrated Reporting Framework; the Carbon Disclosure Project; the Sustainability Accounting Standards Board; the Climate Disclosure Standards Board. In addition, the United Nations (UN) sustainable development goals (SDGs) were adopted by world leaders in 2015. There are 17 goals, aimed at ending poverty, ensuring equality, protection of the environment and fighting climate change. Increasingly, companies are using the SDGs to report on their strategic objectives.

Integrated Reporting Framework

A voluntary reporting approach that links an organisation's strategy, governance, and financial performance with the social, environmental, and economic context in which it operates. The non-financial information has to be integrated in the annual report, applicable organisation-wide.

The Carbon Disclosure Project (CDP)

A not-for-profit organisation that asks companies, cities, states and regions for data on their environmental performance. It holds the world's largest collection of self-reported climate change, water and forest-risk data. Affiliated organisations measure and disclose their emissions and climate change strategies to the CDP through annual questionnaires.

UN Global Compact

A policy initiative that seeks to align business strategies to 10 universal principles covering human rights and labour, anti-corruption and the environment. It is a membership scheme, and affiliated companies report on implementation of these 10 principles. In 2013, UNGC and GRI renewed their memorandum of understanding to align GRI's new G4 Sustainability Reporting Guidelines with UNGC's 10 universal principles.

Stock exchanges are increasingly encouraging voluntary disclosure on ESG criteria and influencing how companies report this. Some, such as the Singapore Exchange SGX, are already requiring listed companies to disclose on sustainability issues. In February 2017, the London Stock Exchange issued guidance on ESG reporting. Financial indices, such as the Dow Jones Sustainability Index and the FTSE4Good, also outline benchmarks to measure the sustainability.

UN Guiding Principles on Business and Human Rights

These apply to all states and business enterprises. They seek to provide an authoritative global standard for preventing and addressing adverse effects on human rights triggered by business activity.

Mandatory disclosure

There are a number of mandatory reporting requirements that companies have to adhere to within the UK:

- The Companies Act 2006
- The Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013
- The Companies, Partnerships and Groups (Accounts and Non-Financial Reporting) Regulations 2016/1245
- The Modern Slavery Act 2015

Current reporting requirements in the UK

Companies Act 2006

Mandatory reporting obligation on all companies (except small companies) to include a review in the strategic report "to the extent necessary for an understanding of the development, performance or position" of the company, giving information about employees and environmental matters.

Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013

Requirement to produce a strategic report, approved by the board of directors, as part of the annual report. Quoted companies must report on human rights and greenhouse gas.

Modern Slavery Act 2015

Section 54 (the transparency in supply chains clause) requires commercial organisations with a turnover of £36m and above to produce an annual statement detailing the steps taken (if any) to ensure that slavery and human trafficking are not taking place in either its own operations or its supply chains. The statement has to be published on the homepage of the company's website. There is no limitation on the nature of goods or services supplied or sector of operation.

EU Non-Financial Reporting Directive [Directive 2013/34/EU]

Requirement for the disclosure of non-financial information by certain large undertakings and groups, applying to large public-interest entities with more than 500 employees. Small and medium-sized companies will be exempted. The UK has transposed the requirements of the directive.

What barriers are there to reporting?

- Lack of internal mechanisms to value environmental impacts
- Lack of alignment between sustainability and financial teams
- Failure to fully integrate environmental factors such as water scarcity into long-term strategy
- Lack of metrics to recognise the real costs of climate change.

It is apparent from this overview that there are a number of frameworks available to companies that decide to report on non-financial issues, although there isn't a single, globally accepted version. It is key that sustainability practitioners get to know these frameworks and how they relate to one another so that they can benchmark performance. 🌱

COLLEEN THERON is director at Ardea International



Natural flood management

There are many tools out there that help us understand how nature can reduce flooding, but how useful are they? I would suggest not very – not because of problems with the tools, but how we are using them. We are getting lost in the joys of modelling and losing sight of the goal.

The tools can be put into two camps: map analysis (geographic information systems), and mathematical flow calculations (hydrology). The former entails creating maps that show certain characteristics, such as habitats and soil type, to identify locations that possess more or fewer target characteristics. In this way, a location with a steep slope, poor vegetation and clay soil would be identified as unable to store water during heavy rain. This would be given a high

opportunity rating for natural flood management (NFM): improving its water-holding abilities, perhaps by planting trees, should lessen local flooding.

But imagine that a large marshy area is at the bottom of the slope. When it rains heavily, the water will indeed pour down the hill almost instantly and deluge the area below. But this area is marshland, so will absorb the water and stop it flooding into the river (for a while). Planting trees on the slope will therefore slow the water entering the marsh, but will have almost no effect on how much enters the stream to cause local flooding. We would have spent considerable time and money on creating a lovely hillside forest, but gain no reduction in flooding.

This may sound simplistic, but it could explain why there are such mixed results from NFM projects, which commonly use GIS alone to identify where to make NFM interventions. Even when hydrology is used to understand the degree of flood reductions that these interventions will make, it is generally GIS that identifies where to place the interventions in the first place.

Hydraulic modelling mathematically calculates how water flows down hills and into rivers, then down those rivers to flood settlements (for instance). The models generally try to say how much water will flow past a given point during a given storm event. This is then combined with other information to determine flood levels in and around the river. It does not show where interventions should be placed, or what they should be. This

usually has to be identified using other techniques, then these changes put into the hydraulic model to see what happens.

The equations are complex and require detailed input data: any errors can significantly skew results. There is also a problem with assumptions. Many assessments look at a one-in-100-year storm event, during which it is assumed that rain will fall in 'these' locations and 'these' volumes over 'this' period. It is far from certain how well these relate to real-life weather events.

Hydraulic modelling is sophisticated and accurate, but how meaningful is it given a capricious natural system? Does it make sense to model using 'these' assumptions and 'this' specific storm? NFM is all about using nature, so the solutions themselves will change over the decades. Surely it is wiser to use models that reflect this and work with the data uncertainties of landscapes, averaging results over the lifetime of the natural solutions rather than suggesting an impossible degree of certainty.

GIS and hydraulic modelling are both excellent tools, but for NFM they should be used in the right ways. GIS works best for broad-brush concepts at large scales – such as where NFM is likely to be valuable – rather than informing local actions. Hydraulic modelling is perfect for scenario analysis – the 'what ifs' of specific situations – but is not so good for showing what changes to make to deliver most benefit under real conditions.

The answer is to combine hydraulic and GIS modelling into a single system to prioritise NFM actions across catchments. We should then quantify the expected reduction in flooding as an average over the lifetime of the habitats, since this is where NFM functions most efficiently. Generating more exact results for specific storms will give a false sense of accuracy at unnecessary cost.

This pragmatic approach will make NFM prioritisation modelling sufficiently cheap and accessible for every project to use, and help people understand the likely benefits in meaningful terms. ➔

ANGUS MIDDLETON is director at Viridian Logic

Angus Middleton assesses the use of tools for natural flood management

A model of perfection

Getting back on target

David Thompson asks whether the UN's sustainable development goals are leaving the public behind?

Two years on since the launch of the United Nations sustainable development goals (SDGs), many commentators are providing analysis of the progress thus far. But it is of great importance to ask a more basic question – does the public understand them?

Given that policymaking decisions are often born out of public pressure, the need for the public to be well informed on the subject is significant. If nations are to meet their agreed global obligations, popular understanding, if not active backing, is a must. ➤

Sustainable development goals

Yet, to the frustration of many professionals working in the sustainability sphere, there is an unfortunate disconnect between academic and corporate understanding of sustainable development. Add to that the general public's limited grasp of the subject and it is easy to see how awareness and perceptions can vary considerably across society. While it is important to scrutinise the success of the SDGs to date, it is of equal importance to ask how effectively we are communicating to the public the very need for such goals and the reasons why we cannot fail in our pursuit to achieve them.

On 1 January 2016, when the 17 global goals of the 2030 Agenda for Sustainable Development came into force, countries around the world adopted ambitious targets balancing the three dimensions of sustainable development: the economic, social and environmental. These targets aimed to end poverty, protect the planet and ensure prosperity for all. While the SDGs are not legally binding, governments are expected to take ownership and establish national frameworks to achieve the goals by 2030.

One for all

The UN has been clear that the goals require everyone to play a part: governments, the private sector, civil society and the general public alike. The UN resolution adopted by the General Assembly on

There is a disconnect between academic and corporate understanding of sustainable development

25 September 2015, entitled 'Transforming our World: the 2030 Agenda for Sustainable Development', states: "Public finance, both domestic and international, will play a vital role in providing essential services and public goods and in catalysing other

sources of finance. We acknowledge the role of the diverse private sector, ranging from micro-enterprises to cooperatives to multinationals, and that of civil society organisations and philanthropic organisations in the implementation of the new agenda."

Statements like these make a noble case and are difficult to refute, but alone do little to actually inform the public of the scale of problems we face globally. Despite their earnest ideals, the SDGs will not by themselves inspire the public support that their success hinges upon. This is not to say there is no great work being done to communicate these goals – there are

many examples on both a national and international level, led by remarkable people and targeting every level of society, that are already delivering admirable and quantifiable results.

There is an abundance of research to suggest that the most effective way to communicate the SDGs is to further appeal to our ability to empathise with the situations of others. Although using empathy in public policy has its problems, communicating the human side of the goals should be an integral part of them.

Take, for example, goal number one: to end poverty in all its forms everywhere. Do we understand the scale of poverty, that one in five people still live on less than \$1.25 a day? Are we aware of the feeling of poverty? In fact, it may be closer to home than we realise – as the UN points out, poverty is more than a lack of income or resources; it includes lack of basic services such as education, social discrimination and exclusion. Portraying what poverty means is an important part of eradicating it.



Consider goal number four: to ensure inclusive and quality education for all and promote lifelong learning. The UN recognises that major progress has been made in access to education, specifically at primary school level, but acknowledges that 103 million young people worldwide currently lack basic literacy skills. Few would dispute the importance of addressing this, and part of the SDGs' challenge is to bring these facts to public recognition.

In discussing these issues we should be mindful of a worrying statistic: according to a 2013 survey, only 4% of people in the UK had an understanding of the millennium development goals, which preceded the SDGs. It should therefore be a high priority to focus our attention on encouraging more people to not only understand the SDGs but to support action to accomplish them.

Furthermore, with the uniformly ambitious goals and universal statements, there is a risk that messages do not resonate with some regions and countries. Where particular cultures and economies do not sit easily with sustainability strategies and beliefs, there is a larger mountain to climb.

If the UK public has a poor track record of understanding in such areas of great importance, it is a fair assumption that shaping public opinion presents a distinct challenge across all 193 UN member states. Take the United Arab Emirates as an example: the country's impressive economic growth in recent years requires strong institutional and policy support to achieve balanced and sustainable development. The UAE prime minister is quoted by the United Nations Development Programme as saying: "The UAE has achieved unprecedented economic growth over the past few years. However, these achievements have brought along enormous challenges, which make it imperative to develop an integrated strategy that meets our needs and is consistent with international practice of governance." There is little doubt that, to some extent, he is referring to the issues covered in the 17 SDGs when he speaks of the international practice of governance.

The UAE made remarkable progress in pursuit of the

millennium development goals, and, given the nation's ambition to be a future global leader, it will no doubt achieve success in its SDG targets too. Yet, as the United Nations Development Programme notes, the UAE is under growing pressure to maintain its competitive position and achieve advanced international standards in areas such as public management, legislation, corporate governance and social welfare. These achievements take time, resources and commitment, and so there is a natural trade-off between them.

School of thought

The UAE is actively addressing this challenge by adopting and implementing targeted initiatives and programmes to inform and educate society. For example, in order to help build awareness among children, Dubai schools are taking part in a pilot project entitled 'The World's Largest Lesson' – a programme delivered in partnership with UNICEF and designed to introduce the SDGs to the world's youth and unite them in action.

Part of the 'Project Everyone' global initiative to share the SDGs with all 7 billion people on the planet, the initiative has support from PwC UAE. It reports that 78% of the children taking part said they now felt more confident about talking to people about SDGs outside school, and 92% of children said they cared more about social and environmental issues after learning about the SDGs.

Examples like this demonstrate how one small commitment to enacting positive change has the potential to influence a new generation of future leaders.

On a global scale, the 17 sustainable development goals and 169 targets demonstrate the scale and ambition of this new universal agenda. During the next 15 years, these will be of critical importance for humanity and the planet.

The SDGs seek to build on the millennium development goals and set out to complete what they did not achieve. They are ambitious, integrated and their agenda creates a pathway combating the most pressing challenges of our time, but we have a long way to go before the mission is accomplished. The real task is now persuading the citizens of the world that we must meet our new objectives. 🎯

DAVID THOMPSON is a consultant at Instinctif Partners Middle East, specialising in sustainability and waste management. Prior to pursuing a career in corporate communications, David held the position of editor at the largest publishing house in the United Arab Emirates. In 2013, he graduated with an MSc in sustainable development from the University of St Andrews, Scotland.

92% of children
cared more after
learning about
the SDGs



Cutting Edge

Human 'progress' can place a heavy burden on our planet, but it can also inspire innovative solutions



Ecovative Design

For over a decade, Ecovative Design has been using an innovative technology to make sustainable alternatives to plastic and polystyrene foams for packaging and building materials. Its products are grown from mycelium – the vegetative part of a fungus – which, when combined with non-food agricultural materials, produces a foam-like substance that can then be moulded into various shapes, before being left to set.

The idea developed from a university project in the US by founders Eben Bayer and Gavin McIntyre, and has evolved into a company described by *Packaging World* magazine as being “poised to be a game-changer across various industries”.

Computer giant Dell now uses Ecovative Design's EcoCradle for its products, along with manufacturer PUMA and furniture company Steelcase, with CEO Bayer saying businesses across the world are looking for ways to produce healthier, safer and better performing products.

“Sustainable solutions can be found in nature's toolkit, but mainstreaming applications requires expanding awareness and accelerating innovation,” he explains.

The biomaterials take an average of seven days to grow, and do not degrade without exposure to living organisms such as soil and moisture, but, when broken down into small pieces and placed in the elements, should return to the earth in approximately one month.

They are built to last, and are used to create protective packaging for items like televisions and furniture, home accessories, and other smaller, complex shapes, while the firm has also developed a manufacturing system to grow large block of mycelium composites, which can be used in structural applications such as door cores, and for building construction.

Although the technology and processes are a trade secret protected by patents, the company has started to offer a ‘grow-it-yourself’ kit, available to the general public.

www.ecovatedesign.com

I-Fourth

Led by four young entrepreneurs and science researchers, I-Fourth, a major environmental project and growing international company, was born in a student room in the heart of Manizales, western Colombia, in December 2016.

At the core of this start-up sits the invention of a HyperGenerator, which has the capacity to provide clean water, clean energy, purified air and valuable ecological data – all in one device. It is a world first and could improve the lives of billions of people across the planet.

Vahram Ayvazyan, Jesús David Orozco Berrío, Manuel Felipe García Caballero and Sebastian Medina Gómez created the HyperGenerator with very modest means and have put together a multidisciplinary team whose creative ideas have gained attention in South America, Europe, the Middle East and Africa.

Vahram Ayvazyan has had a prestigious career in social and global enterprise. A well published genocide scholar, he has a background in international politics, and has travelled the world to promote climate change and human rights. He was trained as a climate reality leader by former US vice-president and Nobel Peace Prize winner Al Gore.

The main focus of the generator is fourfold:

- 1) to generate clean water, as nearly two-thirds of the world population experiences water shortages;
- 2) to generate clean air to fight the problem of pollution;
- 3) to create energy, so that those in the developing world with poor infrastructure may have access to it; and
- 4) to collect valuable ecological data, which can inform us of environmental and health conditions and lead to the development of smart cities and communities.

The HyperGenerator's innovative design is anticipated to transform up to 500 litres of atmospheric moisture into drinkable water on a daily basis. The design also has an output of around 3-4kw per hour, which is sufficient to provide power to a small house for instance.

As such, the HyperGenerator has the potential to both improve the heavy burden of populous cities and to facilitate life in remote rural areas. It will revolutionise urban management and help develop smarter cities throughout the world.

The company's motto is "think globally, act locally" – one that will continue to resonate with anybody who has come across I-Fourth.

<http://i-fourth.com>



Seabin Project

Seven years ago, the Seabin Project had its genesis when sailor and boat builder Andrew Turton was travelling the world and thought "if we can have rubbish bins on land then why not in the water?"

Turton teamed up with fellow boat builder Pete Ceglinski and the two launched the Australian Seabin Project in 2015. A year later, French harbour equipment supplier Poralu Marine became the project's exclusive partner and distributor, while six other companies joined forces to help test and improve the seabins.

The V5 Seabin is a floating interception device, designed for installation in marinas, yacht clubs, ports, and any body of water with a calm environment, costing just \$1 to run each day.

It collects all types of floating rubbish by sucking water from the surface of the ocean, filtering it through a catch bag inside the Seabin using a submersible pump, before pushing the water back out, and leaving trapped litter and debris for disposal.

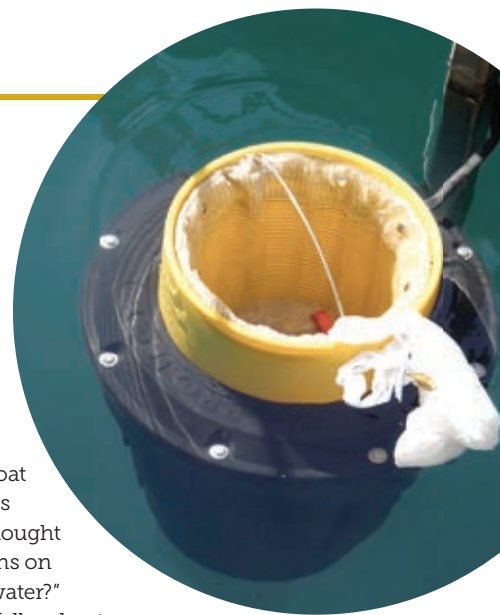
Seabin's head of scientific research and education, Sergio Halpern, said: "Plastic is now ubiquitous in the world's oceans and inland waters and, although the full impact remains to be assessed, the damage to wildlife and even humans is visible.

"The current bins are placed in ports and marinas. However, as we advance our technology, we will be able to design improved seabins to be placed in different environments, increasing our impact."

On average, each Seabin captures 1.5kg of rubbish per day or half a ton each year. Cigarette butts make up 29% of the debris, followed by plastic pieces and food wrappers at 28% and 26% respectively, while it can also catch microplastics down to 2mm small.

The project has also evolved into an educational initiative, and there are now five countries where Seabin Global Ambassador Programme lessons have been included in the school curriculum. More than 4,000 students have been introduced to the issue of ocean pollution as a result.

"Seabins are just part of the solution," says Halpern. "The real answer is found in education and changing our habits, especially around consumption of single-use plastic."



<http://seabinproject.com>

CONNECT

SOCIAL AND COMMUNITY NEWS FROM IEMA

AWARDS

IEMA members recognised with BSI Standards Awards



Phil Cumming FIEMA and Nigel Carter MIEMA CEnv were presented with their awards at the 2017 BSI Standards Forum & Awards event, held in London on 23 November 2017.

The BSI Standards Awards recognise outstanding contributions by emerging standards-makers, innovators, industry leaders, consumer champions and international standards-makers.

The BSI Innovation Award was presented to Phil Cumming for his groundbreaking work in the development of the first standard for the circular economy. Phil was instrumental in ensuring content was applicable to real-world scenarios by user-testing principles, tweeting, blogging, speaking at industry events and encouraging others to do the same.



Nigel Carter received his award for outstanding leadership in the development of greenhouse gas management standards, an area he has been leading since 2002. Nigel is a leader, problem-solver, mentor, expert, voice of reason and an ambassador for standards. He is well respected by fellow standards-makers and his leadership will be missed after he retires later this year.

QUOTE
UNQUOTE

"Thankyou @iemanet for invitation to join Fellows Network. Vital we learn and share solutions together
@planamikebarry

Good chatting to #environment professionals @iemanet north-east event today. Cool venue too! @groundworkuk eco centre.
@AnAndrewClark

"We made Christmas decorations for the office out of old posters and @iemanet @IEMA_Transform magazines #12greendays #UoMGI @UoMSust

LinkedIn



"Having read IEMA's new Change Management for Sustainable Development guide, it is a must-read for all sustainability practitioners wanting to deliver real impactful change. Well done and thank you to all involved!"
@emilyhamilton86



WEBINARS



6 FEB

Upgrading to Associate and Practitioner Memberships: Hints & Tips

What are the benefits of upgrading to these professional membership grades, and how do you achieve them? Join this webinar to learn the measurable benefits of achieving AIEMA and PIEMA, as well as some helpful hints and tips to help you be successful in your application.

➤ To book: <https://register.gotowebinar.com/register/7896334455387093251>



13 FEB

Upgrading to IEMA Full Membership and Chartered Environmentalist

Learn about gaining IEMA Full Membership and Chartered Environmentalist status, including the competencies, assessment process and support tools designed to help you progress your application. If you're thinking about applying for Full Membership, this webinar is perfect for you.

➤ To book: <https://register.gotowebinar.com/register/6852818755993950467>



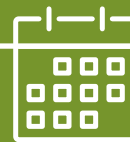
20 FEB

Becoming an IEMA Fellow

IEMA Fellow is the world's foremost community of sustainability leaders and advocates for sustainable business. It's the ultimate destination on the IEMA membership journey. In this session, we'll highlight how Fellow Members lead the sustainability agenda and how you can join them.

➤ To book: <https://register.gotowebinar.com/register/5708528417796047618>

Connect



WHAT'S ON THIS MONTH

iema.net/events

THU 8 FEBRUARY 2018

Let's Create Sustainable Cities

17:00 – 19:00 GMT

IEMA Futures, the national IEMA network for young environment and sustainability change agents, explores what it takes to make a city truly sustainable.

You'll hear from two leading experts in the field: Sandra Norval of Catalicity and Martin Gettings of Canary Wharf Group. They will be discussing key issues, including: transport, waste management, food, water, housing and energy.

➤ bit.ly/2mPpt1i

FEBRUARY 2018

IEMA Workshops: Future Challenges for Environmental Auditing

IEMA is undertaking a comprehensive study to highlight the future challenges for environmental auditing.

These workshops are an opportunity to contribute your thoughts and ideas to this important work. You will be led by Nigel Leehane, an IEMA Fellow, principal environmental auditor and chair of the International Organization for Standardisation (ISO) environmental auditing sub-committee, to explore the issues and what we can do about them.

The findings of the study will help to shape IEMA's future strategy for the provision of auditors. It will also be offered to the ISO's environmental auditing sub-committee ISO TC207/SC2, which is reviewing its strategy.

Our objective is to publish the report by the end of March 2018.

Tue 13 February 2018

14:00 – 16:30 GMT

➤ bit.ly/2DEAD05

Mon 26 February 2018

14:00 – 16:30 GMT

➤ bit.ly/2B9LvQP



Why did you become an environment and sustainability professional?

A local woodland has played a big part in my choices. It's where I first learned to be independent by playing without adults. But, most importantly, it encouraged me to be appreciative of the natural world.

What was your first job in this field?

My first role in this sector was as project officer in the environmental futures and sustainability team at **Hampshire County Council**. I was fortunate to be trained to use the UK Climate Projections tool (UKCP09) by Met Office climatologists, and, alongside energy efficiency projects, improved service resilience for residents.

How did you get your first role?

One of the managers ran an annual water engagement event that I volunteered at. I was offered a three-month secondment to work on a tool for environmental impact assessment and never went back.

What does your current role involve?

I provide a steer for all environmental activities directly or indirectly delivered by the local council, including transport, waste, energy, biodiversity and air quality. I provide challenge to services, monitor policy changes and ensure compliance.

How has your role changed?

The portfolio I oversee has expanded considerably, so instead of specialising I now need to know enough about everything and where to find assistance.

What's the best part of your work?

Knowing that everything you do is likely to have a positive impact on local people and the planet.

And the hardest?

Knowing when it's the right time to tackle an issue and when you need to park it and try another tactic.

What was the last development event you attended?

The IEMA Solent taster session, with three speakers from different sectors.

What did you bring back?

I discovered how monitoring technology and case management systems can lead to incredible efficiency savings.

What are the key skills for your job?

I cover such a wide range of environmental issues that it's critical to know what skills are available in and outside the organisation. I spend a great deal of time building relationships and negotiating resources. I regularly work with partners, including sponsoring research projects at four universities in my area.

Where is the profession going?

The move towards sustainability means that there are more professionals who are required to have an incredibly broad spread of knowledge.

Where would you like to be in five years' time?

I'm keen to move into the commercial sector at some point to broaden my range of experience.

What advice would you give to someone entering the profession?

Get in contact with local environmental professionals, volunteer, shadow and get a mentor. Even if the first person can't help, it's such an open sector the chances are they will be able to welcome you into a whole network of inspiring people.

How do you use the IEMA Skills Map?

I use the skills map to identify areas of need and to work up a bespoke development plan.



CAREER PROFILE

Jason Light

Strategy lead for environment at Eastleigh Borough Council

If you had to describe yourself in three words, what would they be?

Secret geeky hippy.

What motivates you?

Improving the environmental performance of the organisation I work for but also influencing residents and businesses in our area.

What's your personal motto?

The more you know, the more you know you don't know. It's dangerous to think you know everything about something.

If you could go back in history, who would you like to meet?

Forester and environmental activist Richard St. Barbe Baker. We both grew up in the same area, where I now work. I've planted hundreds of trees over the years and like to think that I'm continuing the legacy of one of the world's greatest environmentalists. 



Visit www.iema-transform.net for the Full Member profile





LATEST MEMBER UPGRADES

ASSOCIATE (AIEMA)

Adam Lucas
Alan Thom
Alessandro Benocci
Alex Brown
Alex Clifford
Alex Mayes
Alexander Viol
Alyn Tomkinson
Amanda Adams
Andrew Flaherty
April Skinner
Arief Bhudi
Ben Mills
Ben Perrett
Caroline Milree
Catherine Long
Cherry Hall
Chris Stockill
Claire Smart
Colin Wane
Craig Milne
Damon Winterbottom
Darren Poland
Darshika Patel
Dave Holmes
David Birnie
David Blundall
David Kingdon
David McHarq
David Pemble
David Penny
David Witherspoon
Dawn Ryall
Dean Hook
Dee Nesbitt
Dicky Kurniawan
Douglas Lea
Eddie Allan
Emma Twidale
Emma Whitney
Eoin Kennedy
Esther Morrissey
Faye Davies
Francesca Taylor
Gavin Evans
Gavin Tuck
Hannah Woodall
Helena Dino
Hind Gaili
Howard Curle
James Livingstone
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Jason Thomas
Jemima Wong
Jenny Murley
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Liam Harkin
Liana Sinclair
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Lorraine Dillon
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Mia Coetzee-Page
Michael Jones
Michelle Stroh
Mick Clarricoats
Mokhtar Abdelaziz Adowa
Medical Corporation
Molly Guirddham
Neil Doherty
Neil Glover
Neil Heslop
Niall Kelly
Nicholas Wills
Nick Carr
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Qamar Kashmi
Renee Devereux
Rhea Akiens
Richard Mackie
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Robert Watkins
Robyn Coyne
Roderick Mace
Russell Jeanes
Rustam Abdullayev
Saltanat Kassymbekova
Sam Owen
Sara Finch
Sarah Thomson
Sarah-Jane Oates
Shahazan Aftab Ali
Sian Holtam
Signe Klovane
Sion Atkins
Sophie Appleton
Stephen Ford
Steven George
Steven Riley
Steven Yates
Stuart Glossop
Suleiman Mohammed Kumshe

Thomas Hodson
Thomas Parkinson
Tim Balcon
Tony Booth
Tracey Mendes
Will Barnard
Yuniwati Yuniwati
Zuleykha Rasulova

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Adam Tillotson
Agnieszka Majkowska
Alastair Marshall
Alex Maddox
Alex Peters
Alexander Skelly
Amy Norris
Andra Stanesco
Andrew Staufenbiel
Angela Bartolo
Annika Bremicker
Aoife Busher
Ben Somers
Beth Squire
Beth Watson
Bronwen Williams
Bronwen Wright
Cara Merusi
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Owen Bonney

Paul Shrimpton
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Scott Bryson
Sean Griffiths
Sergio Daniel Ramirez de la Vega
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Tarek Ali
Tatiana Meakin
Thomas Adam
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Timothy Dale
Vessie Naskinova
Wai Sze Wong
Wing Yin Leung
Yuen Wah Ng
Zaid Shtayyeh

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Ann Cousins
Anthony Byfield
Carrie Behar
Charlotte Gregory
Claire Dickenson
Claire Sweeney
Daniela Viveash
Gary Gordon
Georgina Smith
Kylie Jones
Leanne Tipple
Lorna Hurst
Martin Plappert
Nives Maria Ester Costa
Rebecca Taylor
Sinead Chamberlain
Toby Griffiths
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CHARTERED ENVIRONMENTALIST (CENV)

Caroline Thomson

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Ben Cave
Craig Simmons
Debbie Cousins
Ed Mitchell
Einir Young
Harvey Bradshaw
Ivor Robinich
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Kirit Patel
Matthew Prescott
Paul Stookes
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As a senior member of the environmental planning team you will need to have had previous experience of co-ordinating Environmental Impact Assessments (EIA) and ideally you will have previously managed and mentored junior staff. The successful candidate will support associates/directors as well as manage project workload and assist with further business development.

Salary: We are offering a market leading salary and benefits package (including a car allowance). We provide regular appraisals to ensure career progression and salary reviews against annual performance.

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If you are interested in finding out how you could be a part of this exciting period for us, simply forward a copy of your CV with details of your experience to date and current package (if applicable) to dee.booth@pegasuspg.co.uk

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