

TRANSFORM

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FOR ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS

November 2018
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Hard talk Dieter Helm on the state of UK environmentalism
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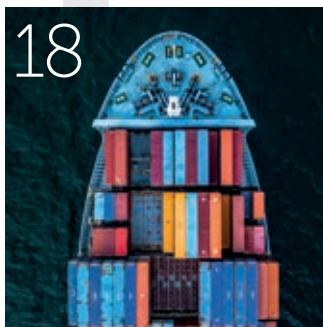
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bit.ly/smart_sustain

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bit.ly/circ_econ

Transport

David Fletcher tells IEMA Futures about his work on sustainable transport solutions
bit.ly/sustain_transp



TIM BALCON, CEO OF IEMA

Expanding our influence

I've said it before, and I'll say it again: there is no better source of collective environment and sustainability knowledge than the IEMA membership. When we assemble what we know and channel it in the right places, our impact and influence is beyond measure. If you need to see some evidence of what that looks like, flick to pages 8-9 to get your IEMA News update. There, you'll see exactly what serious influence looks like. Because of all you know, how you share it and your absolute determination to make things better, we are able to shape legislation, regulation and standards that have a genuine global impact.

As you read on, you'll see that members have been reviewing the UK's Modern Slavery Act 2015. This was the first piece of legislation of its kind in the world, and now that it has been in place for a few years, the UK Home Office is reviewing its effectiveness – and IEMA was chosen to take part in the consultation. Throughout November, members were feeding back on where the Act is working, where power should lie and how compliance could be better supported. We've been able to take those views to the Home Office, and look forward to telling you more as things develop.

You'll also see that recommendations for the UK's new Environment Act were presented to the government at 10 Downing Street last month. The ambitious Blueprint for an Environment Act that we've been working on as part of the Broadway Initiative includes recommendations suggested and tested by IEMA members. I cannot emphasise enough how significant this is, and I think it is a real milestone in the story of our influence.

And if you needed any further convincing that, together, we enjoy a new scale of recognition and impact, IEMA will be hosting as part of the major COP24 international climate talks next month. We've had a presence at COP before, but this is the first time we'll be there in our own right.

This is all because of you. Your generosity with your time and knowledge leads to our collective influence not only being recognised, but being genuinely respected on an international scale.

We'll keep you posted on developments on all these areas and more. In the meantime, please keep getting involved. We can only transform the world to sustainability when we work together.



IEMA Transforming the world to sustainability

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

IPCC REACTION

12 years to avoid climate catastrophe

From ending the use of coal to eating less meat, the Intergovernmental Panel on Climate Change's (IPCC) landmark report warns that "rapid and unprecedented changes" are needed to avoid uncontrollable global warming by 2030. Here, some of the world's leading environmental NGOs give their reaction and highlight the key steps humanity must take to prevent climate catastrophe.

WWF: "We cannot throw in the towel on 1.5°C"

"It is clear that the impacts we thought we'd see at 2°C will now appear at much lower temperature levels," senior vice president for climate change and energy, Lou Leonard, says. "In many ways, 1.5°C is the new 2°C, and that's a big deal. The report shows that it's possible to meet this goal relying mostly on proven technologies like dramatically scaling up renewable energy use, halting deforestation and investing in low-carbon transportation – our goalpost is zero net emissions by 2050."

Ceres: "An unparalleled investment opportunity"

"We must use the findings to build on the tremendous momentum and leadership demonstrated by influential investors and companies who are scaling efforts to transition to a low-carbon economy," said vice president Sue Reid. "The dire climate threat faced by the world is also the greatest economic opportunity the world has ever seen. Meeting the challenge will bring tens of trillions of

dollars of investment opportunity, the potential to avoid far greater economic losses tied to climate impacts, and unparalleled opportunities to transition to a more just, equitable and resilient low-carbon economy."

Sierra Club: "The people must fight the corporate polluters"

"We are not waiting around for Donald Trump," says executive director Michael Brune. "Visionary leaders and millions of people are organising to ensure coal plants are retiring, dangerous pipelines are stopped, electric vehicles are deployed and the build-out of dirty gas infrastructure is halted. Alliances and partnerships are being built among grassroots activists, frontline communities, elected officials and concerned people to build an economy powered by 100% clean energy that leaves nobody behind."

350.org: "Keep fossil fuels in the ground"

The science speaks for itself – it is now only a matter of political will," says

programme director Payal Parekh.

"Burying our heads in the sand cannot be contemplated as an option any longer. The climate crisis is here and already impacting the most vulnerable and the least responsible for creating it. The only way to achieve it is to stop all fossil fuel extraction and redirect the massive resources currently spent on the fossil fuel economy towards the renewable energy transition."

Greenpeace: "IPCC plan must be our top priority"

"Will we get there in time? Nobody knows – we're heading into uncharted territory," says Nordic senior policy advisor Kaisa Kosonen. "What matters is that we make it our absolute priority. Only then do we have a chance to protect ourselves from the devastating impacts that science says would start accelerating after 1.5°C. Those who say it's unrealistic are telling us to give up on people, species and planet. We will not accept this. We do not give up on human ingenuity, courage or hope against political apathy and corporate greed – we are determined to succeed."



BUSINESSWATCH



Heathrow offers free landing for first electric plane

Heathrow Airport has announced that the first electric aircraft to regularly use its services will not have to pay landing charges for an entire year – a prize worth nearly £1m.

It is hoped this will incentivise airlines to invest in electric technology, increasing demand and speeding up the arrival of zero-emissions flights at Europe's busiest airport.

▶ bit.ly/2CpPpJG



PepsiCo to provide 100% recycled plastic packaging by 2020

Drinks giant PepsiCo will source 100% recycled plastic for some packaging lines by early 2020 after signing a multi-year supply agreement with Loop Industries. Loop's technology allows plastic of any colour, transparency or condition to meet the US Food and Drug Administration's requirements for use in food-grade packaging.

The deal will also include a marketing plan to raise awareness of recycling, sustainability and the circular economy.

▶ bit.ly/2PB1xLw



Retail giants join forces to clean up domestic fuels

ASDA, B&Q and Wickes have unveiled a range of drier, cleaner and more efficient fuel products to help cut the 38% of particulate matter emissions that come from burning wood and coal in UK homes. More than 50 companies have signed up to the Defra-supported Ready to Burn scheme and will display its logo on firewood and briquette products.

The retailers are also encouraging customers to buy 'smokeless' fuels in the build-up to the winter months, and to adopt efficient appliances that produce less smoke and soot.

▶ bit.ly/2pZtcl9

ENERGY

UK support for foreign oil and gas a "staggering hypocrisy"



The UK's climate targets have been branded "laughable" after the government announced it was considering finance for the expansion of an oil refinery in Bahrain. UK Export Finance said support for the Bapco Modernization Program would see output increase to as much as 380,000 barrels a day, and admitted this could have adverse environmental and social impacts.

Research by the Overseas Development Institute found that 99.4% of all support provided by Britain's export credit agency goes to fossil fuel projects. Further

analysis by Carbon Brief shows that the £4.8bn spent on projects from 2010-16 was almost equal to the UK's total spend on its International Climate Fund from 2011-17, which came to £4.9bn.

Global Witness described the decision as "staggering", flying in the face of rhetoric about the UK becoming a climate change leader. The NGO's climate change campaigner, Adam McGibbon, added: "Until the government commits to phase out its fossil fuel lending, its claims of climate leadership are laughable – this hypocrisy has to stop."

MANUFACTURING

Plastic waste awakening to disrupt petrochemical market

A fall in plastic demand, driven by consumer activism and regulatory bans, is set to disrupt the entire petrochemical value chain, leaving billions of dollars of investments at risk.

That is the warning of a study by IHS Markit, which states that sustainability is the most critical issue facing the global base chemicals and commodity plastics industry. Upstream feedstock demand for aromatics, olefins and chlorine will also be impacted.

Moreover, the study estimates that a fall in demand of 10m metric tons for polyethylene would reduce global ethylene production by 3%-5%, which

could, in turn, reduce demand for natural gas liquids.

Plastic producers, processors and packaging companies also face market uncertainty and investment risk, while governments are confronted with planning difficulties around recycling.

The study's lead author, Nick Vafiadis, said: "It's a challenge that involves every participant of the value chain – from energy to consumer, encompassing both the private and public sectors."





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INTERNATIONAL

IEMA to host at UNFCCC COP24

IEMA has been selected by the United Nations Framework Convention on Climate Change (UNFCCC) to jointly host an event at the upcoming COP24 climate talks. And, subject to ratification, IEMA has been approved as an official body for the first time.



COP24 is the informal name for the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change, which will be held from 3-14 December 2018 in Katowice, Poland. Critical issues that need to be addressed include:

- Finalising the Paris Rulebook, which sets out the detailed rules for countries fulfilling their commitments set out in their nationally determined contributions
- Providing clarity on the role of non-state actors (ie businesses) in delivering change
- Developing the financial mechanisms to ensure the flow of funds from richer to poorer countries to transition to low-carbon systems and adapt to climate change.

Bodies that are officially recognised by UNFCCC can apply to host conference side-events that contribute to the talks. This year – following previous attendance at the previous COP talks, including the seminal COP21 in Paris 2015, as guests of ISO – IEMA's joint application with ISO and the International Accreditation Forum has been successful. Our joint event will focus on international standards and bring together leading names from standards development, implementation and governance.

Final details were being confirmed as TRANSFORM went to press. Further information is available from the UNFCCC COP24 website.

INTERNATIONAL

2018 Talanoa Dialogue Platform launched

Further to IEMA's confirmed presence at COP24, we have also submitted evidence into the COP Talanoa Dialogue. Outcomes from Talanoa will be formally presented to governments at COP24, helping to inform the next round of National Determined Contributions (NDCs).

According to the UNFCCC website, "Talanoa is a traditional word used in Fiji to reflect a process of inclusive, participatory and transparent dialogue. The purpose is to share stories, build empathy and to make wise decisions for the collective good."

IEMA's evidence submission is available on the UNFCCC Talanoa Platform at bit.ly/2J9HKAy and also at bit.ly/2EDUII6

MEMBERS

New CPD platform in January 2019



Following great feedback from members about how we could make maintaining a CPD record easier and more valuable, IEMA is getting ready to activate a new online

system at the start of next year.

From late January 2019, all members will have access to a brand new, purpose-built platform to set career and membership goals, create development plans and record all CPD activities with ease. The new system will fully replace the CPD forms currently used across the membership.

The platform gives clear guidance and structure for planning your annual CPD and recording all relevant activities. The system can also be accessed on the move, as it is fully mobile and tablet-compatible. This means you will be able to record 'Quick CPD Records' and fill in the detail – such as benefits of the activity, the number of hours allocated and any supporting evidence, like a certificate – later on, when you have more time. There is also the opportunity to have your activities or entire record checked by an assessor to ensure you are doing the right development activities to achieve your goals.

Members will access the new platform via MyIEMA and use the same log-in details as you use for iema.net. This means it is important to check you have registered at iema.net and know your password.

The platform is currently being road tested by a number of assessors, selected members and volunteers, in order to ensure the system is ready for access by all members from late January onwards. Further information about the platform, and a reminder of the CPD requirements for all professionally recognised members, will be published in the coming weeks.

If you have any questions about your CPD record, get in touch any time at info@iema.net

BREXIT

Blueprint for a new Environment Act presented to Number 10

With the UK's departure from the European Union just months away, IEMA and its members are working to influence the development of an "ambitious" new Environment Act.

Working as part of the Broadway Initiative, IEMA has been contributing to proposals for the new Act, and a member consultation on the scope and principles closed on 31 October. Shortly before then – on 17 October – IEMA's chief policy advisor Martin Baxter and other key players in the Broadway group were invited to brief the prime minister's environment advisor on their proposals for the new Act at 10 Downing Street. The briefing was well-received, and Martin and the Broadway representatives look forward to working with the government on further developments.

Members will be updated about progress and feedback on the proposals, and what the outcome will mean for UK environment and sustainability professionals. To find out more about the Blueprint, go to www.iema.net/broadway



📍 Martin Baxter, chief policy advisor, IEMA, attended the briefing session at 10 Downing Street

ETHICS

IEMA assists with review of Modern Slavery Act



In early autumn, IEMA and our members were selected by the UK Home Office to contribute to a review of the world's first dedicated Modern Slavery Act.

Modern slavery is an international crime, affecting millions of people worldwide, and has an economic and social cost of up to £4.3bn a year. Introduced in 2015, the UK Modern Slavery Act was the first legislation of its kind in the world, and has helped to shine a spotlight on the issue of modern slavery and human trafficking. In July, the Home Office announced it would review the legislation and seek views from relevant stakeholders on the effectiveness of the Modern Slavery Act.

UK IEMA members were invited to feed back on the effectiveness of the Act during October via an online survey, and all responses are currently being used to form our report to the Home Office.

"The UK Modern Slavery Act was the first legislation of its kind in the world"

NEW REGULATIONS

THE LATEST

■ GUIDANCE ■ LEGISLATION

**PENDING**

Brexit

The UK Withdrawal from the European Union (Legal Continuity) (Scotland) Bill aims to ensure that devolved Scottish law will continue to operate effectively once the UK withdraws from the European Union in March 2019.

➔ cedr.ec/5hu

**1 OCTOBER 2018**

Water drainage

The Petroleum Licensing (Charges) (Wales) Regulations 2018 set fees for applications for petroleum licences and for consents required under them for various listed activities and matters, which includes landward and seaward petroleum exploration licences and methane drainage licences.

➔ cedr.ec/5hh

**12 OCTOBER 2018**

Planning

The Eggborough Gas-Fired Generating Station Order 2018 authorises the construction, operation and maintenance of a gas-fired electricity-generating station of up to 2,500MW. This also permits the acquisition of land, rights in land and to use land for this purpose.

➔ cedr.ec/5hk

**20 NOVEMBER 2018**

Renewables

The Draft Renewables Obligation (Scotland) Amendment Order 2018 will lift a restriction on the amount of electricity that can be produced by hydro generating stations without affecting eligibility for Scottish Renewable Obligation Certificates (SROCs).

➔ cedr.ec/5hj

**29 MARCH 2019**

Timber

The Timber and Timber Products and FLEGT (EU Exit) Regulations 2018 ensure that legislation prohibiting the placing of illegally harvested timber on the market, and establishing a licensing scheme to improve the supply of legally harvested timber, will continue to operate after the UK leaves the EU.

➔ cedr.ec/5hf

**13 SEPTEMBER 2018**

Water discharges

The Environment Agency has issued a guide to help water companies submit appropriate permit applications for storm overflows and emergency overflows. Discharges of storm sewage and sewage in an emergency must be authorised by an environmental permit.

➔ cedr.ec/5he

**21 SEPTEMBER 2018**

Waste

The Environment Agency has released a regulatory position statement to provide guidance on classifying waste wood from mixed waste wood sources. If you comply with its conditions, you do not need to apply a hazardous waste classification for such waste wood.

➔ cedr.ec/5hd

**24 SEPTEMBER 2018**

Brexit

The government has issued a series of Technical Notices to help businesses and the public understand what they need to do in a 'no deal' scenario. They relate to subjects such as regulating chemicals, industrial emission standards, reporting emissions, upholding environmental standards, using and trading in fluorinated gases and ozone-depleting substances, and regulating energy.

➔ cedr.ec/5hv

INCOURT

POLLUTION

Nottingham waste firm fined for dust and odour breaches

A Nottingham waste transfer company and its director have been ordered to pay fines and costs totalling £71,000, following breaches of the conditions of an environmental permit during a 19-month period.

Ryan Colson, the director of Colson Transport Limited, took over the Bulwell Lane site in Old Basford from its previous owners in 2013. The volume of waste passing through the site then significantly increased, with no consideration given to updating its working plan. As a result, dust escaped from the site and odour problems developed; both of these issues had a significant impact on local residents, businesses and a nearby primary school.

Mr Colson and Colson Transport had a history of non-compliance, and had already received a prior warning from the Environment Agency.

However, the site was never consistently operated in a way that complied with an environmental permit.

In sentencing, District Judge Spruce noted the length of time the breaches spanned and the history of non-compliance, and although he found that local residents had suffered from the problems caused by the site, there were no findings that this created a risk to human health.

In mitigation, he argued that there had been no financial gain as a result of the permit breaches, and that there was "clear evidence of significant steps taken to remedy the problems and improving infrastructure in order to avoid recurrence".

Mr Colson and Colson Transport Limited accepted responsibility and cooperated with the investigation, investing approximately £350,000 into the site.



OTHER NEWS

Environment Agency and eBay tackle online trade of illegal used vehicle parts

The Environment Agency has teamed up with eBay to tackle illegal car breakers who use the online platform to trade parts from unauthorised vehicle disposals. The partnership also aims to inform the public, who may unknowingly purchase these illegal parts.

Business sellers who display used vehicle parts for sale will receive a pop-up message highlighting that an environmental permit is required to carry out breakage of vehicles. Sellers will then be directed to the government website, where they can get more information.

Under UK law, all car breakers and traders of used vehicle parts must have an environmental permit. They must also know how to properly dismantle a vehicle and appropriately dispose of hazardous waste. Avoiding appropriate car breaking undercuts legitimate operators and creates an opportunity for illegal waste disposal.

Online sellers of used vehicle parts who comply with the law and have a permit for vehicle breaking operations are advised to display their permit number, or the name of the sites where they source the parts they are selling.

The partnership has resulted in a spike in permit applications to take businesses into legal status.

Sellers who do not display their environmental permit on eBay for trading vehicle parts will be directly contacted by the Environment Agency, which will provide guidance on environmental permitting and warnings about illegal trade activities.

Sellers who do not respond to the Environment Agency's notice will have their trading account suspended or removed from eBay. If sellers who continue to trade, the Environment Agency will take further steps, including reporting them to the police and HMRC as well as making a site visit.

CASE LAW

ClientEarth wins appeal to European Court of Justice

The case of ClientEarth v European Commission, an application for appeal, has been allowed.

The appeal was made against a decision that refused ClientEarth access to specific documents drawn up while preparing an impact assessment. Documents included an impact assessment report for a proposed binding instrument setting a strategic framework for risk-based inspection and surveillance in relation to EU environmental legislation, as well as to a draft impact assessment report relating to access to justice in environmental matters at member state level in the field of EU environmental policy.

Access to those documents was refused on the basis of Regulation (EC) 1049/2001 regarding public access to European Parliament,

Council and Commission documents, which outlines a general presumption that access to certain documents can undermine the Commission's decision-making process. The Commission also felt there was no overriding public interest for disclosure.

The European Court of Justice allowed the appeal and found that the Commission was not entitled to presume, without carrying out a specific and individual examination of each of the documents drawn up in the context of preparing an impact assessment, that disclosure of those documents would seriously undermine its decision-making process.

It was held that wider access should be granted to documents in cases where the EU institutions were acting in their legislative capacity "to increase the transparency and openness of the legislative process".

The documents also related to the environment, meaning Regulation (EC) 1367/2006 on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies applied. This aims to ensure availability of environmental information.

The appeal was allowed, and the decisions refusing access to the documents were withdrawn.





The straight talker

Top energy economist Dieter Helm has a reputation for not mincing his words. He talks to **Huw Morris** about Brexit, vested interests and why the UK is in a mess about waste

Whenver the leading energy economist Dieter Helm thinks about the consequences of Brexit, he recalls

the line from The Eagles' *Hotel California*: "You can check out any time you like, but you can never leave". He feels this is an apt metaphor for what he describes as "the long transition from the current mess to more and more compromises for many years to come". Helm is particularly outspoken about no-deal Brexiteers, calling them "dangerous utopian fools".

"The diehards want us to do just that: they want us to die hard," says the Oxford University professor of energy policy.

"They imagine it would be some great cathartic moment of the British bulldog spirit, manning the customs desks and immigration desks at the ports, and that the Dunkirk spirit would turn what some of them think is a fat and lazy economy –

as the trade secretary once called British business – into a heroic stoicism, as we stride out across the globe, striking trade deals in the way the Royal Navy once ruled the waves."

Speaking out

Helm has an independent mind – and speaks it. At the start of his *Cost of Energy Review*, published for the UK government last year, he said: "the analyses and recommendations are mine alone."

The review concluded that the cost of energy is higher than it needs to be, and that smart energy technologies and the falling cost of renewables have not resulted in businesses benefiting from cheaper supplies.

He did not win many rounds of applause for citing Contracts for Difference (CfDs) auctions, feed-in-tariffs (FiTs) and Renewables Obligation Certificates as "legacy costs" that significantly contribute to rising energy



"When you look back at how money has been spent in the past 10 years or so, you see that we could have spent some of the renewable subsidies better"

prices. He believes these should be separated, ringfenced and parked in a legacy bank, with businesses exempt from all associated costs. CfDs and FiTs should then be phased out and subsumed in an Equivalent Firm Power Capacity auction.

Helm sees a unified carbon price as the most efficient way for the UK to meet the Climate Change Act's target for emissions to be 80% lower in 2050 than they were in 1990. This would be cheaper than continuing with market interventions. He sees the inability of market participants to grasp all the various interventions as itself likely to increase energy costs.

"No minister or civil servant saw any draft of the report," he says. "I had been thinking about the issues for 35 years. I sat down and wrote it and answered the precise questions I was asked.

"I worked flat out on it for 12 hours a day over two and a half months. It was totally exhausting, but important and worth doing. I am pleased with the report, whatever anybody else might think."

Helm has described renewables as the "new conventionals", and his relationship with them has been fractious at times. Indeed, he sees many of his critics as vested interests that benefit from the high cost of energy. "Renewables UK, like the National Farmers' Union and the British Medical Association, is a lobby group for a particular set of interests in a policy context in which large subsidies are at stake," he says. "The idea that I, as somebody who is completely independent, would necessarily agree with everything that Renewables UK or anyone else would say is absurd.

"When you look back at how money has been spent in the past 10 years or so, you see that we could have spent some of the renewable subsidies better and got more carbon results and more bang for our buck."

Helm would have devoted £1bn of the estimated £30bn in offshore wind subsidies to back a carbon capture storage demonstration project, especially in the light of the UK's



Interview

head start in developing this type of technology under its legacy of empty oil and gas wells in the North Sea.

"It is not surprising that policy activities make mistakes and errors. I think more money should have been spent on research and development, and less on offshore wind," he says. "Spending £1bn would have funded a massive research and development programme when we need new technology to crack climate change. That would be a sensible policy to suggest."

Pace of change

The onslaught of new technologies and innovation will remain radical and relentless, with artificial intelligence, robotics and the digital world transforming what is possible for industry and energy systems alike. This, Helm says, will create "huge uncertainties", especially around the

"social and political dislocations" that will take place. However, there is no debate over whether technological changes will take place, he argues.

"My guess is that, not too far into the future, existing wind and solar technology will look primitive compared to what is coming," he suggests. "I did my thesis on a typewriter with Tipp-Ex and carbon paper, and the iPhone is 10 years old. Does anyone think technological change will get any slower?"

While everything changes, some things need to stay the same. As chair of the government's Natural Capital Committee, Helm had a major influence on the UK government's 25-year environment plan and its central objective of leaving the natural environment in a better state for the next generation. His drive to establish a value for natural resources to encourage their conservation, and to embed the

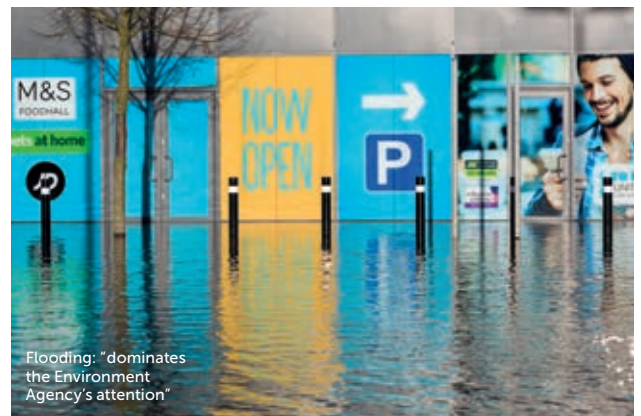
principle of net environmental gain, has been accepted by some parts of the government – but not all of it.

The principle of natural environmental gain, while championed by Defra, is so far not a feature of major infrastructure projects. The revised National Planning Policy Framework published in July, which governs policy direction and is cited in most planning appeals and law cases, makes a few references to 'biodiversity net gain', but suggests that it is up to local planning authorities to prepare their own policies on securing measurable net gains. Veterans in the sector see this as a recipe for more confusion, a lack of consistency and a further proliferation of approaches that are unlikely to make life easier.

Helm is undeterred: he claims net environmental gain has been "accepted and integrated into the planning system" and says he will advise the National



Landfill: "a remarkably primitive way of doing things"



Flooding: "dominates the Environment Agency's attention"



Renewables: "the new conventionals"

"You can't possibly say our current policies and institutions have delivered good outcomes, and that leads to the conclusion they are not fit for purpose"

Infrastructure Commission on the issue. He points to forthcoming government legislation on agriculture and the environment as "work in progress, but pretty fast progress nonetheless" – especially considering there have been five environment secretaries in the past eight years. Of the environment plan, he says: "I would not expect it to be what I would ideally like, but it's very good and goes in the right direction."

Proposals for the future

One area in which the UK could do significantly better is waste, which Helm describes as "a complete mess" and the legacy of an "out of sight and out of mind" approach to policy. "The outcomes are pretty dreadful, leading to a lot of criminality and a massive problem with plastic, among other things," he says. "You can't possibly say our current policies and institutions have delivered good outcomes, and that leads to the conclusion they are not fit for purpose."

Here, Helm calls for a return to first principles. "The first thing to sort out is whether we should get rid of something or see it as a resource that ought to be managed. Landfill is a remarkably primitive way of doing things, unless it's for storage and future use."

"Somebody has to be in charge of that framework, and I don't think the Environment Agency is the appropriate body – we need an environmental protection agency. This is no criticism of the staff involved, but the current Environment Agency was cobbled together in 1991 out of the Ministry of Agriculture, Fisheries and Food, water, Her Majesty's Inspectorate of Pollution and the National Rivers Authority. It was a compromise, in which the policy would have to be sorted out afterwards."

"It has about 10,000 employees and is bigger than many of the major companies on the FTSE 100 Index. It has an impossible task, running a workforce doing major capital programmes for flood protection as well as regulation, policy and enforcement. It's a tribute to the staff that they have managed to do the whole thing at all."

Helm says floods dominate the Environment Agency's attention and spending to the extent that, whenever it rains, senior management "will always be distracted from landfill and fly tipping". His starting point for reforming policy would be to split up the Environment Agency and devote resources to properly carrying out waste regulation, supported by a strong legal framework.

The forthcoming environment bill is expected to include a new green watchdog and offers the opportunity for desperately needed change, says Helm. His idea of an environmental protection agency is one that is "small, powerful and capable of prosecuting government as well as private violations of the law".

All of this will be in the context of the UK leaving the EU. Helm argues that it is an economic fact of life that trade is about standards. Those standards are set by the world's big economies – the EU, the US and Japan; every country follows one of these blocks for its rules, and then these big blocks do trade deals between themselves. Close neighbours who trade with each other are in permanent negotiations over their relationships, he says. "It's a process that will go on and on forever and just like the Hotel California, 'you can check out but never leave'. Those who refuse to see that are from another planet." 🗨️

HUW MORRIS is a freelance journalist

PROMOTING NATURAL CAPITAL

- 1993** Worked on DTI's Energy Advisory Panel until 2003
- 2002** Member of DTI's Sustainable Energy Policy Advisory Board
- 2004** Appointed to Prime Minister's Council of Science and Technology
- 2007** Awarded CBE for services to energy policy
- 2011** Appointed to assist European Commission in preparing Energy Roadmap 2050
- 2012** Appointed Chair of new Natural Capital Committee to independently advise government on state of England's natural capital. *Three State of Natural Capital* reports published in 2013, 2014 and 2015
- 2015** *Natural Capital: Valuing the Planet* and *The Carbon Crunch* published
- 2015** Reappointed Chair of Natural Capital Committee
- 2017** NCC publishes *Improving Natural Capital*, the third State of Natural Capital report
- 2017** *Cost of Energy Review* published





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Ensuring workplace health is a major contribution to the social and economic aspects of sustainable development. So it's very encouraging to see recent progress on occupational health in UK construction.

In 2001, the construction industry was told to "get its health and safety act together or face legislation" by then-deputy prime minister John Prescott. Commercial UK construction has responded well, but workplace health management hasn't kept up.

It's easy to see why: a mobile workforce of employees, agency workers and the self-employed means most construction companies are not sure how – or whether – to manage their workers' health. Change could be on the way, though, and two big drivers have been focused stakeholder involvement and standardisation.

A new standard

Standardisation can underpin industry-wide improvement. According to Margaret Grahamslaw, B&CE head of occupational health: "Construction must unify its approach if it is serious about improving occupational health."

A common baseline for construction health surveillance, brokered by B&CE with widespread industry support, is set for 2019. It should mean that clients, contractors and health assessors understand and agree on what needs to be done in this area, and provide a readily-repeatable assessment process.

Key aims include enabling the health surveillance of hundreds of thousands of construction workers and giving employers, employees and the wider industry the information needed to protect

workers and extend their working lives.

The baseline will cover:

- Blood pressure and vision
- As required: hearing, respiratory, skin and Hand Arm Vibration Syndrome (HAVS) assessment.

Stakeholder expectation

In a competitive industry, standardisation wouldn't make waves without stakeholder involvement. Several years ago, Clive Johnson, group head of health and safety at property developer Landsec – along with others in a newly-formed Health in Construction Leadership Group – set out to recreate the 2001 Prescott safety summit, targeting occupational health. In 2017, they invited construction CEOs to a summit and asked them to commit to a change in the way construction deals with occupational health. A specific

commitment – to deliver an agreed, cost-effective route to widespread construction health surveillance – paved the way for the B&CE initiative.

Cultural change

As the big players in commercial construction committed to tackling the industry's respiratory and musculoskeletal injury problems, they also focused on mental health.

The 2017 summit introduced 'Mates in Mind' with the support of the British Safety Council. This and other initiatives such as Building Mental Health have unlocked industry dialogue, training and support in this area, and given rise to the 'Mental Health First Aider'. The last two years have arguably seen more progress on mental health issues in construction than the history of organised building.

In sustainability circles, we are used to pursuing continual improvement. In 2019, we could see construction turn from an occupational health laggard into one of the UK industry's frontrunners. This would be good news for employees, employers and the UK economy – and for sustainable development. ①

PAUL REEVE, FIEMA is director of business at ECA

TIME FOR CHANGE

At the 2017 health summit, construction CEOs committed to tackling ill health, including mental ill health, in construction.

- UK construction workers are at least 100 times more likely to die from an occupational disease than from an accident
- Up to 1.2m working days are lost annually due to work-related ill health in construction
- The rate of suicide in construction is well above the national industry average.

Source: HCLG 'Health in Construction' initiative

We are all dependent on ships: they carry more than 80% of everything we buy and consume. But shipping is responsible for nearly 3% of global greenhouse gas emissions – higher than the whole of the UK, Canada or Brazil. According to the European Parliament, that could increase to 17% of global emissions by 2050.

Until recently, shipping was largely unregulated from an environmental perspective – it was not included in the Paris climate agreement – leaving operators without incentives to reduce emissions. Now, two global targets are prompting change. First, a cap on the amount of sulphur permitted in fuel, due to come into force in 2020, has seen a move away from the heavy fuel oil (a dirty by-product of oil refining) that is traditionally used. Second, in April of this year, 170 members of the International Maritime Organisation (IMO) agreed to a deal that requires the shipping industry to reduce greenhouse gas emissions by 50% by 2050.

The deal was hard fought. It was widely reported that countries such as Saudi Arabia, Brazil and Panama resisted the target, while other countries and environmental organisations pushed for it to be higher. “The 50% target is not enough,” says Faig Abbasov, a shipping officer at European campaign group Transport & Environment (T&E). “That’s the bare minimum that we can do. We asked for a 100% reduction.” Nevertheless, the target is now in place. The question remains whether it can, and will, be met.

Cleaning up

As the vast majority of ships rely on fossil fuels, the only way to reduce emissions is to cut the amount of fuel used or replace it altogether. One of the most promising

Testing the waters

The shipping industry is waking up to the problems associated with fossil fuels. **Katie Burton** investigates the alternatives being proposed

zero-emission replacements, according to experts in the field, is hydrogen. When hydrogen is combined with oxygen in a fuel cell, a chemical reaction produces water and energy – without producing CO₂. A 2017 study by Sandia National Laboratories found that hydrogen fuel cells could satisfy fuel demand for nearly all maritime vessels.

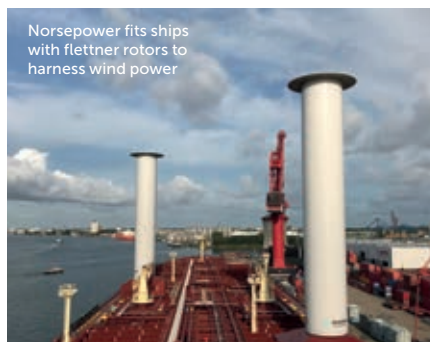
Some companies are already experimenting with and utilising hydrogen, though this is still in the early stages. In 2017, Belgium company CMB launched The Hydroville, a small passenger ferry that uses hydrogen to power a diesel engine. Many researchers and environmentalists believe this is only the start. “We think that, at the global level, 80% of shipping will likely go with hydrogen, or another form of hydrogen-carrier, such as ammonia,” says Abbasov.

Dr Tristan Smith, a reader in energy and shipping at University College London, agrees, though he admits to witnessing scepticism within the industry: “Hydrogen or ammonia are looking like the ways we’re going

to achieve this – it’s entirely viable. Whenever anyone in the industry says to me, ‘it’s impossible, couldn’t imagine ever operating on anything other than oil,’ it’s just absurd given the evidence that we already have.”

So far, so good, but even the most strident hydrogen devotees accept that there is a major drawback. Along with various technical issues (hydrogen storage takes up a lot more room than traditional fuel), hydrogen is phenomenally expensive – more than seven times the price of distillate fuels. The reason for its high price is that it doesn’t exist as a gas on Earth in large quantities. As Dr John Broderick, a researcher at Manchester University explains, it is either produced from natural gas or through electrolysis of water. If it’s to be made cleanly (which is the whole point) it also requires expensive carbon capture technology.

As Abbasov puts it: “Operating hydrogen ships with the current hydrogen price is immense. Without having some incentive, or at least



disincentive to use the diesel ships, there's no way that shipowners would choose hydrogen. Nobody sane would choose hydrogen."

It may be the future, but there evidentially won't be a mass move to zero-emission fuels any time soon. What's more, without decarbonisation of the energy supply used to produce hydrogen, the benefits won't be fully realised. "It matters how fuels are produced, not just what fuels you burn in the ships," says Broderick.

Unfortunately, the alternative fuel widely touted as the next step for cleaner ships is liquified natural gas (LNG) – regarded by almost all environmentalists as being far from the answer. Though using LNG reduces air pollution due to its lack of sulphur, its record for CO₂ emissions is weak. "It is fundamentally a high-carbon fossil fuel," says Broderick.

Wind power

While a closer look at oil-alternatives might fuel nothing more than despondency, at least in the short term, it doesn't mean the 50% target is unachievable. Back in 2009, the IMO concluded that CO₂ emissions could be reduced by up to 75% through the application of operational measures and

"A 2017 study found that hydrogen fuel cells could satisfy fuel demand for nearly all maritime vessels"

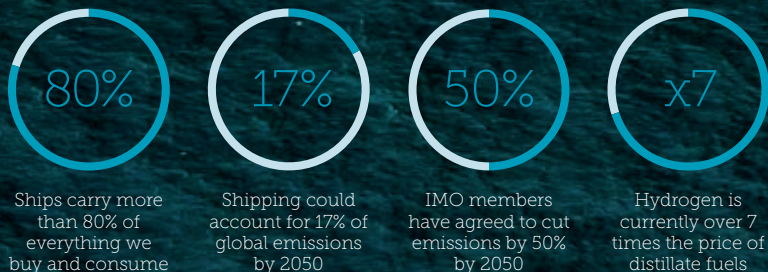
existing technologies. Among many other methods, this includes improving design standards for ships, optimising routes and implementing slow-steaming – literally moving ships slower.

Then there's the power of wind. Though no container ship is going to forego its engine entirely, auxiliary sails are having a comeback. Finnish company Norsepower, a specialist in flettner rotors (spinning cylinders that harness wind power to propel a ship) is one of the main players. The company has fitted out three ships so far, but Jukka Kuuskoski, senior vice president of sales and marketing, says this is only the start. "We can see that the market is activating rather quickly now that regulation and pressure to reduce fuel consumption is increasing," he says. "There is a lot of demand and interest." The level of fuel saving achieved by the sails depends on



THE STATE OF SHIPPING

Action is needed to forge a cleaner industry



several factors, but Norsepower says the technology has the potential to create savings of up to 20%.

James Mason, a PhD researcher specialising in wind propulsion at Manchester University, has also noticed a renewed interest: "There's a really positive vibe around wind propulsion at the minute," he says. "A lot of designs were being made and tested a few years ago. Now some, especially the flettner rotor, are being picked up by the industry."

Mason is researching how the optimisation of routes and ship speed helps to increase the efficiency of sails. Simply put, he says, slowing a ship down increases the efficiency of the sail and optimises fuel savings. Like many other experts in the field, he is keen to demonstrate the importance of viewing methods in tandem.

Incorporating batteries

Anyone with a passing interest in the future of road transport may well wonder whether batteries also have a part to play in shipping. The answer is yes and, once again, the Nordic countries are steaming ahead.

Swedish company Scandlines has converted two of its large passenger ferries, Tycho Brahe and Aurora, to run on battery-electric power on the HH Ferry route between Helsingør, Denmark and Helsingborg, Sweden. Cables are connected to the ships every time they

"Though no container ship is going to forego its engine entirely, auxiliary sails are having a comeback"

reach port, and the batteries are charged with the power of 70 electric cars.

Batteries are only an option for short journeys, but they are an appealing alternative for some ferries. They can also be utilised as part of a hybrid method in which battery-electric power is deployed near ports, reserving the engines for the rest of the journey. This would have the dual benefit of reducing carbon emissions and the release of air pollutants near the shore.

The future

The full gamut of options open to the shipping industry is impossible to summarise in so small a space. Suffice it to say that they are both promising and complicated. Most environmentalists won't be surprised to hear that experts are calling for clearer and better-enforced regulation to drive the uptake of technological innovations such as

hydrogen fuel. As long as oil is the cheapest option, it will remain king.

"You need to somehow close the gap," says Smith, who is also co-chair of the Carbon Pricing Leadership Coalition. "We need to do that with a carbon price, or just ban the use of fossil fuels. The question remains whether there is the political appetite or the industry appetite for something as complicated, but potentially cost-effective, as the carbon price."

Abbasov agrees that regulation is both difficult and necessary. "Imagine the IMO – 174 countries coming together with so many differences in economic development and culture," he says. "You can't expect the IMO to put in place a level of carbon pricing that will be good enough to breach the price gap between hydrogen, ammonia or battery, and diesel. That will take a lot of time." For now, T&E is pushing for regional regulations like those passed in Norway, as well as campaigning for slow-steaming at the international level.

It's not yet clear how quickly change will take place in the shipping industry. Apart from a handful of forward-looking companies, mostly based in Scandinavia, there's a long way to go. The technology exists and the 2050 target certainly can be reached. Whether it will be reached is another matter. [T](#)

KATIE BURTON is a production editor and writer



Kamran Shezad

MSc MIEMA CEnv

The sustainability advisor and congregation member of the Bahu Trust explains how the charity won 'Best Green Initiative' at the British Beacon Mosque Awards

The Bahu Trust describes its environmental work as 'faith-based' – what does that mean? An estimated 80% of the world's population associates themselves with a faith. A place of faith, whether it's a mosque, a church, a synagogue or a temple, has the power to influence those who attend to worship. The majority of holy books and scriptures, such as the Quran, the Torah and the Bible, contain vast amounts of teachings on nature and the environment.

The Bahu Trust represents 22 mosques across the UK, and we are using these teachings to influence change in people's behaviours around sustainability. An environmental message from their faith leaders has the potential to bring about change and is an added resource in the fight against climate change.

Your work is said to be inspired by the Islamic Declaration on Global Climate Change – tell us about that.

The declaration is a universal response towards climate change and its impact on our daily lives, which is grounded in Islamic principles that are common to all Muslims. It is based on Islamic environmental ethics and incorporates Quranic verses and examples from the prophet Muhammad. It is the responsibility of all Muslims to tackle human-influenced global climate change.

The declaration goes on to call on all Muslims, "wherever they may be, to tackle the root causes of climate change, environmental degradation, and the loss of biodiversity". It essentially represents the 'Muslim voice' within climate change discourse, and has been drafted by Dr Fazlun Khalid, founder-director of the Islamic Foundation for Ecological



and Environmental Sciences (IFEES/ EcoIslam). Dr Khalid is one of the most influential and leading Islamic scholars on the environment.

What are some of the environmental projects the Bahu Trust has been involved in?

'Talking the talk' is very important, but it is just as imperative to 'walk the walk'. The Bahu Trust has been highlighting to its community what actions they can take in order to move towards a sustainable lifestyle. It has taken steps to educate the community and raise awareness, which began by training our imams on the connections between their faith and their responsibility as stewards of this earth. Imams are potential change-makers, and they need to be well-equipped if the right message is to be given from the pulpit. Since then, 12 of our 22 mosques have installed solar panels and converted to renewable energy. Educational sermons and messages have been developed, and we have held plastic-free events and carried out community clean-ups of local streets.

Do you ever collaborate with people from other faiths? We are involved with Footsteps – Faiths For A Low

Carbon Future. It is a wonderful interfaith organisation in Birmingham that brings together members of the Christian, Muslim, Jewish, Sikh, Hindu and pagan faiths, as well as people of no faith at all. The common ground between us all is that, no matter what our theological beliefs are, all our faiths tell us to care for the planet – we have a duty to be guardians of this Earth.

The network allows everyone to come together to share good practice and hold joint educational events.

Do you have any other future environmental projects planned?

The Bahu Trust is keen to expand on its existing work. A new module, 'Islam and the Environment', will be added to the supplementary school. We are looking to expand our educational resources to include web-based resources, videos and toolkits. The Bahu Trust is also looking to develop an 'EcoMosque' set of standards (in line with EcoChurch and EcoSynagogue) to give mosque management members some guidelines on how to green up their mosque and reduce their carbon footprint.

There are two important points here. First: Islam, as a faith, is essentially environmental. Second: Muslims have been found to be particularly motivated by their faith. The challenge is that Muslims are not always aware of the first point. Through educating Muslims into understanding the environmental dimensions and responsibilities of their faith, we can potentially bring two billion people on board to tackle climate change. We need everybody on the planet to work together for a sustainable future. 🌱

Valuing the intangible

Catherine Early reports back from the 2018 Valuing Landscape conference, where landscape and built environment professionals heard the latest thinking on how nature and its benefits can be valued

As the importance of nature for climate change mitigation and adaptation, flood alleviation, and health and wellbeing has risen up the political agenda and in the public's consciousness, debate over how to put a number on these benefits has intensified.

A failure to measure the value of natural assets such as trees, rivers and pollinating insects increases the difficulty of persuading those with the means to fund improvements – for example, politicians and developers – to clean up pollution or improve environmental protections. The situation is complicated by the fact that the benefits of a healthy environment often apply to people and communities other than those who pay for improvements made to it.

At a recent conference held by the Landscape Institute, delegates heard that healthy, well-designed landscapes are vital in helping to protect people from challenges including climate change, increased city densification, and health problems such as obesity and depression. All of these issues are partly driven by lack of access to green space.

"Bringing the value of nature into decision-making is really key to halting the unsustainable patterns of environmental degradation that have accompanied economic growth," said Karen Ellis, chief advisor on economics and development at the campaign group WWF.

Humans derive most of the benefits of nature for free, which has rendered these benefits invisible in economic decision-making, she says. Failing to put a price on assets, or underpricing them, leads to

overexploitation – which is what is happening to nature.

"We've assumed nature's benefits will continue to be freely available, that there is an infinite supply," said Ellis. "That's not true, and we're starting to hit environmental limits. This is starting to cause us social and economic costs, which will only get worse with economic and population growth."

WWF has therefore shifted its thinking towards arguing for conserving nature based on its economic and social value, following a realisation that a focus on the intrinsic value of nature has not been effective in protecting it, she said.

Generating benefits

One way to embed natural capital thinking into the thinking of decision-makers is through landscape and planning



The latest report from ONS says that the natural environment is worth £761bn to the UK economy

NATURE IN NUMBERS

Putting hard figures on the value of nature could help people to see its importance



Carbon sequestered in forests is worth £105bn to the UK economy



Renewable energy resources in the UK are valued at £35bn



Natural capital is estimated to have contributed £16bn to the UK economy in 2015



Vegetation filters particulates from the UK's atmosphere – a service worth £1bn

approaches. For example, the 25-year environment plan includes the principle of 'environmental net gain' for development, which would require all housing and infrastructure development to generate a net environmental benefit. The principle covers biodiversity, flood prevention, water and air quality, and recreation.

"It's a bit controversial, and its outcome will depend on how it's designed, but it could generate much better outcomes for nature," said Ellis. "We're working hard with other campaign groups to set out what design aspects we'd like to see, and that will garner our support for the scheme."

For example, she said, campaigners would like to see environment net gain included as part of a broader improvement to strategic planning, and implemented within a long-term strategy for enhancing nature. To embed the value of nature into public decision-making, natural capital should be incorporated into measures of economic success – using net national product (NNP) instead of gross domestic product (GDP), for instance.

NNP measures the total value of goods and services in a country for one year, but also allows for depreciation of capital goods – so could take changes in the value of natural capital into account. The concept has been promoted by Dieter Helm, chair of the Natural Capital Committee. NNP could then be reported on in the Budget, said Ellis. "GDP is very short term – you can push it up by using up all your natural assets, but that doesn't take account of the fact that this will undermine your future income potential."

She suggested that the economy should be stress tested for its resilience to natural capital depletion, and all relevant

government policy – such as agriculture policy, infrastructure development and the industrial strategy – scrutinised to find out the impact on natural capital.

"We need to consider natural capital so it becomes part of our psyche alongside GDP, which has really dominated economic performance assessment," Ellis concluded.

Hard numbers

Ian Hodge, professor of rural economy at the University of Cambridge's Department of Land Economy, noted that there are rights and wrongs in valuing nature. Some argue that numbers are needed to persuade politicians to protect nature, he said. "For example, if we decide to create a park and forgo industrial development, there is a direct cost, which leads us to a value.

"Humans derive most of the benefits of nature for free, which has rendered them invisible"

"Many people will say that, in the absence of hard numbers, politicians won't pay attention. That may be true. Even if the value is wrong, it might still give us some indication of importance."

On the other hand, he said, the process of valuation might leave some features out, and these would then be discriminated against in the final decision. For example, the value of the park could be calculated, but its biodiversity could be omitted from

the valuation simply because there was no agreed methodology for measuring it.

Ursula Hartenberger, global head of sustainability at the Royal Institute of Chartered Surveyors (RICS), believes that consideration of sustainability should be integrated into property valuation. "It's not rocket science," she said. "We're already valuing some aspects that would fall under that umbrella – for example, the proximity of the property to public transport."

Sustainability is included in the RICS' guidance to surveyors, which states that valuers should be aware of the implications that sustainability features could have on property values in the short, medium and longer term. "It is about applying quantitative evidence and qualitative judgment to new value-influencing features and improving market efficiency by providing accurate information to the marketplace," said Hartenberger.

However, one challenge is that sustainability is a "moveable feast", with elements that are constantly evolving in terms of public attitude and understanding of their impact, she noted. Consumer preferences can change fast – for example, people's attitudes to single-use plastic.

Ultimately, sustainability should be taken into account in property evaluations for a range of reasons: meeting professional duties and requirements; reflecting market conditions; avoiding mispricing assets (such as valuing conventional buildings too highly and sustainable ones too low); and to comply with mandatory requirements from professional organisations and jurisdictions. 

CATHERINE EARLY is a freelance journalist

Microsoft is under scrutiny over the experimental data centre it has established in the North Sea.

Chioma Ibe considers the implications of the software giant's actions

Into the deep



Project Natick phase 2 contains the equivalent of several thousand high-end personal computers

The data centre was deployed into the North Sea in early June 2018



Microsoft describes Project Natick as a research project investigating the numerous potential benefits that a standard, manufacturable, deployable under-sea data centre could provide to cloud users all over the world.

Project Natick phase 2 is a vessel that contains the equivalent of several thousand high-end personal computers, with enough storage for five million films. It was deployed into the North Sea early in June 2018, at a location within the European Marine Energy Centre in the Orkney Islands. Natick phase 2 is intended to demonstrate that full-scale data centres can be economically manufactured and deployed underwater.

Experts believe the data centre will benefit the communications industry; it is projected that it will drastically reduce the distance data will have to travel between source and destination. Microsoft predicts that the placement of the centre in the marine area will not only be energy efficient but will also actually save energy, as the cooling of its computers do not require air conditioners or water consumption. According to Microsoft, this means that having more data centres in water would help cut down the emission of greenhouse gases.

Despite these purported benefits, the deployment of project Natick phase 2 has given rise to legal questions. Some of the questions that have been raised are:

- What rights do Microsoft or other companies have to sink data centres into the oceans?

- Would there be any energy in the form of heat, noise or light emissions entering the marine environment from the 'data centre', and if so, what could be the effect on the marine environment?

"According to Microsoft, having more data centres in water would help cut down the emission of greenhouse gases"

- An artificial reef will develop; what will be the consideration for the eventual decommissioning of the data centre?

- What will be the effect on the transport and fishing industries?

What rights do companies have to sink data centres into the oceans?

There are no laws that specifically regulate the sinking of data centres. Comparison can be drawn from the laying of submarine telecommunication cable; the first international legislation to regulate the laying of submarine cables was the 1884 International Convention for Protection of Submarine Telegraph Cables.

The regulation of the data centre could equally fall under Section 3 of 1982's UN Convention on the Law of the Sea (UNCLOS), which permits states and competent international organisations to deploy equipment and installations for scientific research.

Given the absence of specific data centre regulation, the international law that allows the placing of offshore oil and gas facilities in water, and also the laying of underwater submarine communications cables, will be similar to that allowing the placing of a data centre in water.

The right to place equipment and facilities offshore within UK waters – be it territorial waters, continental seabed or exclusive economic zone – stems from a number of national and international laws, including the two aforementioned conventions as well as the Geneva Convention on the Continental Shelf (1958), the Geneva Convention on the High Seas (1958) and the Convention on the International Regulations for Preventing Collisions at Sea (1972).

No company has a right to own a space in the sea for the placement of equipment or facilities – rather, coastal government grants permissions to companies or organisations to place equipment

International law

➡ Microsoft has stated that the data centre will be recycled at the end of its life

or facilities in their territorial waters and exclusive economic zones. The consent of coastal states is also required within areas of the continental shelf. Beyond these maritime zones, anyone can deploy a facility or lay a cable. For Project Natick to be deployed, Microsoft would have applied through the European Marine Energy Centre and been granted a marine licence issued by the Marine Scotland Licensing Operations Team.

Would there be 'energy' in the form of heat, noise or light emissions from the 'data centre'? What could be the effect on the marine environment?

UNCLOS defines pollution of the marine environment as including the introduction of energy. According to the European Commission, 'introduction of energy' refers to light, electricity, heat, noise, electromagnetic radiation, radio waves or vibrations.

The effect of underwater noise on marine life is not fully understood, as only a few tests have been done in this area, but researchers believe that it can have an adverse effect. Additionally, cooling water systems can raise water temperature. Nevertheless, it is believed that the amount of heat that Natick will generate in water will not alter the ambience of the sea around the vessel.

The fear is what will happen if the test run of Project Natick is successful, and such data centres proliferate as a consequence. Were this to be the case, marine ecology could be adversely affected. However, it has been claimed that the increase in temperature of the surrounding sea will be minimal – equivalent to just 1/2,000th of a degree downstream.

The European Commission's Environmental Impact Assessment (EIA) Directive (2011/92/EU) requires member states to do an assessment of the marine environment before carrying out a project, and also to monitor the project's impact on the marine environment. Though the effects of these emissions might not be known at the moment, the



"The effect of underwater noise on marine life is not fully understood, as only a few tests have been done"

international community has always taken a precautionary approach when it comes to matters of environmental law. Simply put, this means that, even when the effects are unknown and there is not yet any known scientific proof of an adverse effect, measures should be taken to prevent harm to the environment.

An artificial reef will develop; what will be the considerations for the eventual decommissioning of the data centre?

Once a facility is placed in the sea, organisms usually attach and build up around it. This has been seen a lot in the oil and gas industry, where areas around platforms have turned into artificial reefs.

Submarine cables often transcend different maritime zones. The data centres, on the other hand, are placed in waters quite close to shore – Natick phase 1 was placed 1km off the pacific coast of the United States.

Additionally, the average oil and gas platform is enormous compared to the data centre – a meagre 40ft vessel. This means that removing the data centre from

the water is unlikely to be as Herculean a task as removing a production platform. Production platforms also generate muds and cuttings, while the data centre will leave no residue in the sea.

There will still, however, be disruption to the artificial reef that forms while the vessel is in the water. This will raise questions about any endangered or threatened coral and other species that are found on Natick when it's being decommissioned – it may need to be moved or relocated. The decommissioned installation may even have to be left on the seabed.

What will be the effect on the transport and fishing industries?

The oil and gas industry, transportation industry, communications industry and fishing industry are all competing for use of ocean space. The fishing and transportation industries have, at different times, been at loggerheads with the oil and gas or communication industries. The problem usually arises in relation to the loss of fishing gear or obstruction of waterways due to the latter industries' facilities.

In the case of the data centre, the question is whether its closeness to shore would cause it to obstruct waterways or cause harm to fishing gears – both reasons why decommissioning of offshore platforms is an issue.

Microsoft has stated that, at the end of the data centre's life, it will be recycled. ➡

CHIOMA IBE is a PhD candidate in international environmental law at Nottingham Law School, part of Nottingham Trent University



If you have a BIG QUESTION you want answering in a future issue, contact: iema@redactive.co.uk

How impactful could hydrogen be in decarbonising the economy?



CHARLES WOOD

Policy manager, New Energy Services and Heat (NESH), Energy UK

"Several projects are starting to address the challenges involved"

Hydrogen could help decarbonise the UK's heat, power, transport and industrial processes, as well as provide large-scale, long-term energy storage. The biggest potential market is low-carbon heat.

The UK is unlikely to be a major producer of hydrogen via electrolysis, given its lack of excess renewable generation. It will rely upon steam methane reformation and auto thermal reforming. Two challenges exist – efficiencies in production processes, and the application and integration of carbon capture, utilisation and storage.

Several projects, including H21 Leeds City Gate, HyNet in the North West and ALIGN-CCUS in Teesside, are starting to address these challenges, complemented by broader work focused on end use – primarily Hydeploy at Keele University and the government-backed Hy4heat. These will help establish hydrogen supply chains, including compatible appliances for end users, and will determine the requirements for repurposing current gas distribution networks and storage facilities.

For hydrogen's impact to be quantified, the projects should be bolstered by incorporating a range of other low-carbon technologies and business models into large-scale trials, establishing the UK as a global leader.



JON HUNT

Manager, Alternative Fuels, Toyota

"Hydrogen can now offer economically viable solutions"

Apart from its emissions advantages, the hydrogen case is so compelling because of its versatility. It allows energy to be produced locally from many sources, including waste and surplus intermittent renewables. It can be stored indefinitely and shipped relatively easily. It can be used for industrial feedstock, and can produce emission-free heat and power for a range of applications, including transport, homes and businesses. Driven by greater awareness, changes in attitude and scientific developments, hydrogen can now offer economically viable and socially beneficial solutions.

In the long term, Toyota sees hydrogen fuel cells replacing the petrol engine in a hybrid system. In 2015, we introduced the world's first mass-produced dedicated fuel cell vehicle, the Mirai, and we have increased production in line with the development of the hydrogen infrastructure and customer acceptance.

There is potential in battery electric vehicles, but charging time, range and battery costs limit their benefits. Mass adoption will not happen unless energy storage and better grid distribution are addressed. Hydrogen production and storage could solve these issues. The transition will be challenging – but the adoption of renewable, clean and low-cost energy is imperative.



PROFESSOR ROBERT STEINBERGER-WILCKENS

School of Chemical Engineering, University of Birmingham

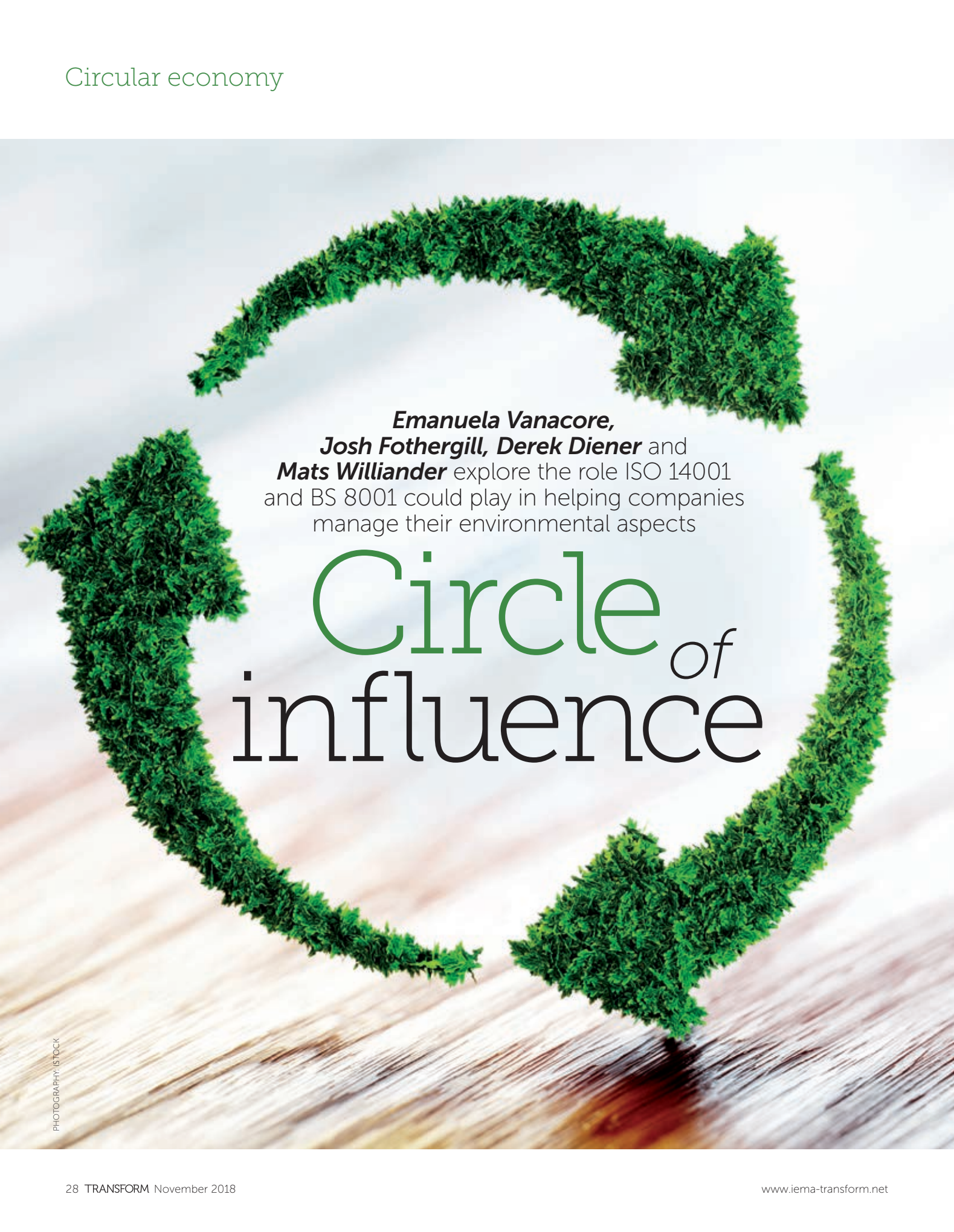
"An alternative to pure hydrogen is the synthesis of methane"

Hydrogen can be produced relatively simply, using renewable electricity to split water. It can then be converted back into electricity or heat by fuel cells, resulting in the sole emission of water.

In this way, renewable electricity not only helps decarbonise the electricity supply, but can also be used for heating and as a fuel in electric vehicles with a fuel cell drivetrain. This is only worth doing, however, if the energy input comes from a renewable source – otherwise emissions are simply shifted from point of use to point of production.

Mixing hydrogen into the natural gas supply system is one way carbon footprints could be reduced. However, burning hydrogen in boilers or gas engines will produce nitrous oxides and other urban air pollutants.

An alternative to pure hydrogen is the synthesis of methane from hydrogen and carbon dioxide. This is net carbon-free if the carbon dioxide originates from plant matter and is fully compatible with gas infrastructure. Methane can also be converted back to electricity and heat in certain fuel cells at high efficiencies. This could be an easier way to decarbonise heating energy supply, since it makes use of the current supply system while increasing energy conversion efficiency.

A large, circular arrow made of green moss is positioned on a wooden surface. The arrow is composed of two curved segments that meet at the bottom, forming a continuous loop. The moss is vibrant green and has a textured, leafy appearance. The wooden surface is light brown with visible grain patterns. The background is a soft, out-of-focus grey.

Emanuela Vanacore,
Josh Fothergill, Derek Diener and
Mats Williander explore the role ISO 14001
and BS 8001 could play in helping companies
manage their environmental aspects

Circle_{of} influence

IMA has played a key role in the development of both ISO 14001 and BS 8001, and our professionals will be at the vanguard of the global transition to a circular economy.

The circular economy (CE) concept envisages an economy that is less dependent on material throughput and runs on renewable energy. For its part, industry is supposed to get more use out of products by reusing more (via processes such as remanufacturing), and to lose less material through better recycling. A transition to a circular economy would require – by almost any measure – a huge alteration to today's economy, and delivering it will require disruptive changes to industry. However, there are existing institutions that, if used, could make subtle industry modifications, with large and transformative effects.

We believe that ISO 14001:2015, as the global standard for environmental management systems, could be a catalyst for CE transition if it were used slightly differently, possibly with 'plug-ins' from the British CE standard BS 8001:2017. Environmental Management Systems (EMS) help companies to formally manage their environmental aspects – both the legal requirements and beyond – and ISO 14001 is the most widely used standard for EMS, with more than 300,000 certifications globally in 2017. In many companies and industries, ISO 14001 is now considered a fundamental part of business, or even a precondition for doing business. As such, it is widely implemented in industry. Considering the breadth of its use, it could be said that ISO 14001 carries some influence.

Help or hindrance?

These topics were studied in the TRACE EMS (TRAnstitioning to a Circular Economy via Environmental Management Systems) project conducted by the Research Institute of Sweden RISE (Viktoria) AB between October 2017 and August 2018. The project, funded by Vinnova (the Swedish Agency for Innovation), has investigated the extent to which ISO 14001:2015-certified

companies that are exploring their transition towards a CE may benefit from, or be hindered by, their EMS.

The researchers worked closely on the project with two companies, car manufacturer Volvo Car Corporation and IT financing company 3 STEP IT, which benefited from standards expertise on ISO 14001 (Raul Carlsson, from Swerea SWECAST) and BS 8001 (Josh Fothergill). The project aimed to answer several questions: does ISO 14001 hinder or help a transition to a CE? What can be done to make the ISO 14001 standard more usable, to support organisations in the upcoming transition towards a circular economy? And how might BS 8001:2017 be used to enable this?

Through surveys, interviews, workshops and collaborative analysis of both companies' business practices regulated by ISO 14001, the research generated two main conclusions.

First, ISO 14001 appears to be neither a hindrance nor a help when transitioning towards a CE; its propensity to contribute is totally dependent on the goals chosen and set. However, with a CE-oriented mindset, there are a number of ways organisations can enhance ISO 14001's ability to influence organisational CE progress:

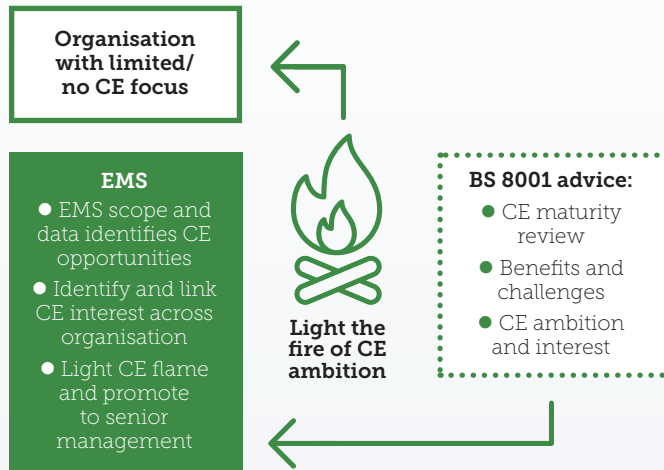
- Use the review process to identify opportunities, as well as risks
- Increase focus on the product, and on what happens upstream and downstream from the company
- Include strategic goals as part of the environmental risk and opportunity review
- Evolve ISO 14001's traditional focus on processes to place far greater emphasis on product-service systems.

Second, there is a mismatch between societal visions such as CE, which are normative, and standards such as ISO 14001, which do not prescribe strategic goals or future states. ISO 14001 was, however, found to include multiple 'hooks' that could be used to enable CE exploration or support circular thinking and activities in an organisation via its EMS (life-cycle

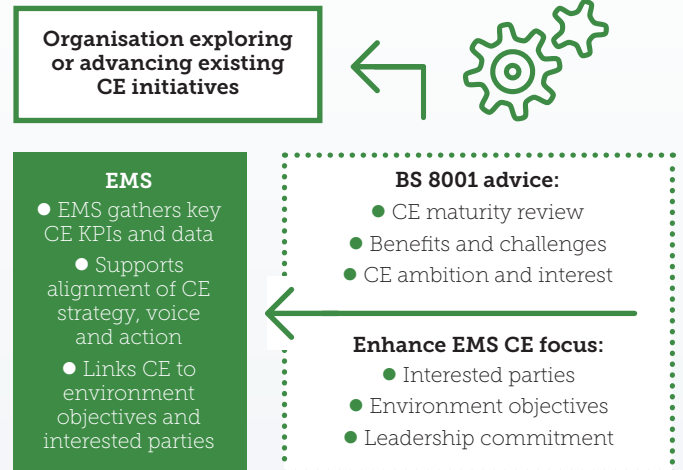


Circular economy

Scenario 1: Coalescing an organisation's interest in CE



Scenario 2: Supporting an organisation's existing CE progress



thinking, linking EMS to business strategy, and so on). These hooks are unlikely to be applied consistently and effectively by organisations implementing an EMS, unless a CE-oriented mindset is developed or already exists within the organisation. This is where the research found that key aspects of BS 8001's guidance could offer the potential to leverage greater CE progress via an EMS.

BS 8001 helps to define this 'CE mindset', placing emphasis on six CE Principles: Value Optimisation, Collaboration, Transparency, Systems Thinking, Innovation and Stewardship. These principles are considered critical to an organisation, forming a comprehensive approach to framing and driving its ambitions in relation to circularity, with the standard's framework, advice and tools guiding integration. The research conceived of two scenarios where a one-two punch of ISO 14001 and BS 8001 could combine to enable an EMS to coalesce initial interest in CE within an organisation (Scenario 1) or be used as a support to enhance existing CE progress (Scenario 2).

Sparking progress

Discussions identified that organisations with CE interest and an operational EMS are likely to face challenges when aligning and combining these to drive timely progress towards more circular modes of operation. However, by incorporating relevant activity and the CE principles from BS 8001 into an organisation's development or review of its EMS, there are clear opportunities to spark positive progress. It is suggested

that the BS 8001's guidance is likely to initially prove valuable in advancing CE thinking across the following EMS activity areas:

- Business strategy and senior management team commitment
- Interested parties and communications
- Environmental objectives
- Organisational culture, values and behaviours.

Initial action in these key areas could help establish, support and align an organisation's overall strategy with its CE ambitions, helping formulate CE-related environmental objectives and contributing to a broader cultural and behavioural shift across the organisation.

Overall, ISO 14001 provides a structured approach to improving environmental performance but is unlikely to drive CE transition. Organisational interest, commitment and leadership are key to such a transition, but support is needed to structure this ambition into strategic and operational activities. This research suggests there is value in further exploring the integration of aspects of

BS 8001's guidance into core ISO 14001 requirements, with the aim of unlocking the potential for EMS to better support organisational CE transition on a global scale. ¹¹

JOSH FOTHERGILL, FIEMA CENV is founder of Fothergill Training & Consulting Ltd and BS 8001 expert to the TRACE EMS project. **DEREK DIENER, EMANUELA VANACORE, PIEMA** and **MATS WILLIANDER** are researchers at RISE AB-Viktoria and members of the TRACE EMS project research team

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SOCIAL AND COMMUNITY NEWS FROM IEMA

EVENT

Sustainability and climate change

21 November 2018

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- UK's climate change transition: a progress update and the next challenge?
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- Breaking new ground: farming and forestry providing new opportunities for climate action.

➤ For more information and to register, visit bit.ly/2CnGubx

EVENT

Leeds recycling and energy recovery facility

22 November 2018

The new recycling and energy recovery facility in Leeds is designed to remove recyclable waste from household black bins and recover energy from what is left over, reducing the amount of waste sent to landfill. The facility will improve the city's recycling and energy recovery rates, and is designed to high standards to ensure it has a positive impact on the local environment.

You will see an innovative site first-hand and find out how Leeds City Council is working to improve and evolve waste management.

➤ To register, visit bit.ly/2Af3AQc

MASTERCLASS

Policy Insight Briefing – London

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We will look at key issues that will impact your business:

- Brexit
- The proposed new Environment Act
- Biodiversity and environmental net gain
- Mandatory carbon reporting understanding
 - Resources and waste strategy
 - International standards.

➤ This workshop is worth three hours of IEMA-recognised CPD.
To register, visit bit.ly/2ye2cu5

QUOTE UNQUOTE

Lots of my colleagues ask me how I became a member of IEMA and, more often, what is the level they should be initially aiming for. Well, fortunately, there is a video for that! Practitioner level is a great stepping stone and gives access to external mentors, on-line material, webinars, and a world-wide network of sustainability professionals.



NEIL GOUDIE CENV MIEMA

Absolutely delighted to become a Full Member of IEMA and achieve Chartered Environmentalist #charteredenvironmentalist status. It's been a lot of work, but with the support and guidance of the Institute and some wonderful people I made it.



JASON LIGHT MIEMA CENV

Delighted to have had the opportunity to present our proposals for an ambitious new Environment Act to the PMs environment advisor at Downing Street this morning. Crucial that we set a positive vision for future prosperity!

@iemanet

@MBAXTERIEMA

Great discussions at @iemanet Sustainable Construction Conference, Birmingham: harnessing clear values out of "green noise" becoming part of the integral construction process as env professionals rather than a side conversation.

@AMISIAN_ #UKCW2018 @UK_CW

Great news! Just days ahead of Association Excellence Awards where @IEMA_Transform is up for Best Assoc. Magazine, we've just found out your mag is up for Best Membership at @the_cma Awards!

@IEMANET

Brilliant news that @iemanet our magazine @IEMA_TRANSFORM is up for yet another Award. It has been shortlisted for Best Membership at the @the_cma at the International Content Management Awards in November. Well done.



@KEMP_TURNBALL

MEMBERS WEB EXCLUSIVE

Sustainability and climate change

This summer, Marek Bidwell, FIEMA CEnv met with business owners in north-east England who have established services to grow the circular economy. He tells us about the article he has written for TRANSFORM Online, reporting on the difference these firms are making and the challenges they face.

What inspired you to write this piece?

Earlier this year, Newcastle upon Tyne hosted the Great Exhibition of the North 2018. Stephenson's Rocket was on display in the city for the first time since 1862, and events showcased northern art, music, sport and science.

However, this offering was very different from the last great exhibition held in the city, in 1929. That was billed as 'Britain's greatest industrial exhibition' and promoted the region's heavy industry: railway engineering, shipbuilding and mining, as well as consumer products such as Newcastle Exhibition Ale. Since then, the region has lost much of its heavy industry, but I felt that something was missing from this summer's exhibition and I wanted to tell that story.

What story?

In *Cradle to Cradle*, authors Michael Braungart and William McDonough acknowledge the benefits of the Industrial Revolution but suggest that, if you were given the task of planning it today, you would not do it in a way that emits billions of pounds of toxic material.

The North East of England is heavily implicated in the material benefits gained from the Industrial Revolution – and the social and environmental consequences of it. Famous inventors and industrialists of that period, such as George and Robert Stephenson, William Armstrong, Charles Parsons and Joseph Swan, are icons here, their names engraved on many a building.

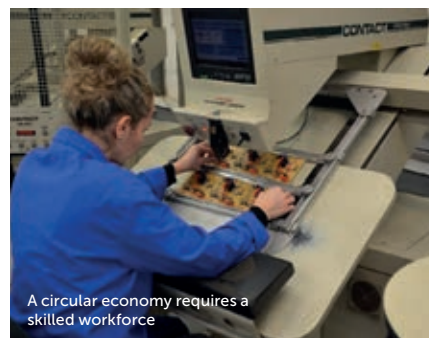
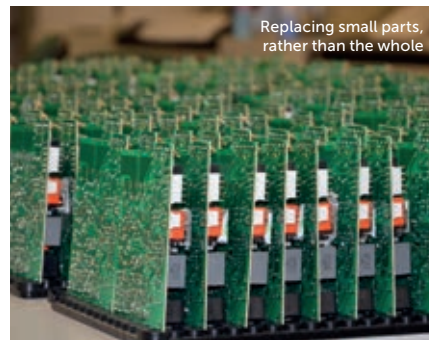
This story is about a new generation of entrepreneurs who could take their place, answering the call of Braungart and McDonough to 'remake the way we make

things' by bending the linear economy into a circle. If the government provides the right regulatory and fiscal environment, this circular economy could flourish to recover some of the ground that was lost by the decline of heavy industry – causing much less damage in the process.

Who did you speak to?

I interviewed four business owners from the North East, each of whom has established or developed firms that specialise in the reuse of materials. I also spoke to the sustainability manager of Newcastle Hospitals in order to understand the challenges faced by a large waste producer.

"Famous inventors and industrialists are icons here"



What did you learn from their stories?

A lot! Speaking to people who have experienced the pleasure and pain of growing a business is very different to reading about circular economy principles in a textbook. Businesses in this sector disrupt the linear economy and challenge everything; they must provide excellent customer service to survive; often they will need to train staff in specialist repair techniques; the parts they remanufacture can be better quality than new items; and they must carefully interpret the definition of waste, so that they don't fall foul of the law. Also, the survival of the businesses I spoke to is dependent upon the regulatory and fiscal framework established by the government.

In the article, I distil these findings, along with others, into 10 lessons for anyone interested in establishing such a business or promoting the circular economy – as well as one lesson for government.

Find the article at TRANSFORM Online by visiting bit.ly/circ_econ



IEMA FUTURES

Sustainability in transport projects: a consultant's perspective

With people living and working all over the world, quick and efficient travel is imperative – and the environment needs to be a priority in the planning of new transportation schemes. IEMA Futures interviewed David Fletcher, an associate at transport planning consultancy SYTRA Ltd, to find out how he ensures the sustainability of projects, how the transport sector has evolved throughout his career and how we can improve projects in future.

What does your workday usually involve?

No two days are the same, with a mix of site visits, design team meetings, client or pre-app meetings, and assessment work in the office; this ensures the job remains fresh and exciting.

How do you ensure your projects are sustainable?

A key component of the job is coming up with innovative and cost-effective transport solutions to mitigate the impact of developments and ensure they meet people's needs. The revised National Planning Policy Framework emphasises the provision of electric vehicle charging points at new developments, and this is just one part of ensuring a development is sustainable. It is also key to ensure there is good access to public transport, high-quality cycle parking, and good-quality, safe pedestrian and cycle routes to key destinations that are usable at all times of day. It is important to provide development in the right locations so that they benefit from existing facilities, or help enhance and improve facilities and sustainable transport infrastructure.

Has the concept of sustainability changed during your career?

The biggest change has been the greater focus on the environmental impacts of a development. Government policy has shifted in favour of sustainable development.

How could projects become more sustainable? Are there any barriers stopping this?

Many transport policies are outdated and overly prescriptive, which can limit the opportunities for developments to bring forward innovative transport solutions. More needs to be done to help councils come up with innovative solutions to transport problems – especially given resource constraints. The potential for councils to work more closely with consultancies and other transport professionals will be key to creating innovative transport solutions and sustainable developments.

The views expressed in this article are those of David Fletcher and are not necessarily those of SYTRA.

➡ To read the full article, visit bit.ly/sustain_transp



LATEST MEMBER UPGRADES

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Robert Spencer, AECOM
Colin Malcolm, SLR Consulting
Mark King, World Bank (The)
Andy Middleton, TYF Group



Why did you become an environment/sustainability professional? During my early work in biomedical sciences, it became clear that no single discipline could solve the issues we face. I developed a multidisciplinary approach to problem analysis; this allowed me to embrace a holistic perspective, linking science, policy and planning to sustainable development. I employ multidisciplinary and interdisciplinary scientific knowledge to promote change and prosperity while protecting the processes sustaining our existence. What more would a scientist and practitioner want?

What was your first job in this field? I was a lecturer for graduate students – teaching, supervising students' studies, carrying out my own research and providing environmental advice to government agencies.

What does your current role involve? I provide advice to top decision-makers at MECA on matters related to policy, strategy and regulations, and I participate in inter-ministerial committees dealing with national development or planning issues. I also advise technical departments on best practice in environmental management and sustainability, train staff, assist proponents and consultants as they develop sustainable projects, and review EIA reports.

How has your role changed/progressed over the past few years? It has progressed in parallel with my experience level and the changing political and economic environments. Now it involves innovative environmental policy and strategic actions advocating sustainable development and supporting economy diversification. It also revolves around systems improvement and change management, leading to better business environments while retaining environmental protection.



CAREER PROFILE

Ali Hassan FIEMA

Professor, Institute of Environmental Studies and Research, Ain Shams University; senior environmental expert, Ministry of Environment and Climate Affairs (MECA), Oman

What's the best part of your work? Finding solutions, realising successful sustainable projects, and teaching.

What's the hardest part of your job? Finding the right balance between a proposal's economic, social and environmental costs and benefits.

What was the last development event you attended? A course for 'LEAN Managers', preparing MECA management and advisors to lead change management in environmental planning.

What is/are the most important skill(s) for your job? First and foremost, innovative and creative thinking, leading to operational and demonstrable change. That requires a comprehensive understanding of the business environment, policies and regulations, coupled with excellent communication and negotiation skills, which are key in driving sustainability.

Where do you see the profession going? One should consider the geography – there are different trends in different geographic regions. The drivers also vary between countries and regions. We see different types of progression in various parts of the world. In my region, we are advocating changes to

ensure continuous improvement, career development and high-quality professions. In addition, we are developing a system of accreditation for the various levels of environmental and sustainability professionals.

Where would you like to be in five years' time? My ambition is to go back to teaching, so I can continue to contribute to building a new generation of graduates capable of leading the world to true sustainability.

What advice would you give to someone entering the profession? Learn the languages of all stakeholders of sustainability.

How do you use the IEMA Skills Map? I use it to ensure I have what it takes and to direct a path to sustainability, one step at a time.

If you had to describe yourself in three words, what would they be? Grateful, determined and ambitious.

What motivates you? Challenges, success and new practical developments.

What would be your personal motto? Work for your worldly life as if you are living forever, and work for your Hereafter as if you are dying tomorrow.

Greatest risk you have ever taken? I crossed a 50km of quicksand with my colleagues to carry out a piece of research.

If you could go back in history, who would you like to meet? Professor James Hardy of UC Berkeley, who taught me a lot when I was taking my first steps in the field. 🙏



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