

# TRANSFORM

FOR ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS

Environment  
Economy  
Society

Aug/Sep 2022  
[www.iema-transform.net](http://www.iema-transform.net)

## Cultivated Tastes

Is lab-grown meat about to go mainstream?

### PLUS

**Back to nature** Isabella Tree on the power of rewilding

**Down the line** Why supply chain sustainability is being neglected

**Russian forward?** How the war in Ukraine could impact net zero

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[bit.ly/3IAYhvR](https://bit.ly/3IAYhvR)



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SARAH MUKHERJEE MBE, CEO, IEMA

# Finding a balance

**H**ello, and welcome to another edition of *Transform* magazine. This summer has seen another set of weather records broken around the world, whether for heat in Europe and the US, or rain in Australia. While the hot weather brings many challenges, not least in keeping vulnerable people cool and comfortable, politicians and energy providers in Europe are becoming increasingly concerned about energy supply in the autumn and winter. The war in Ukraine, and the subsequent deterioration of relations between Russia and its western neighbours, means that European leaders might need to build new capacity in record time. It's an opportunity for renewable energy – but can you balance security of supply with the sort of cross-border networks needed to make the most of energy from the sun and wind? Chris Seekings finds out on page 28.

The increased construction costs caused by the current energy crisis might also be an opportunity for organisations to move towards a circular economy. However, implementation of circular processes is not without its challenges – for example, around transparency. Might digital product passports be a solution? Aoife O'Donnell and Ellie Walshe consider the pros and cons on page 32.

As more and more companies start to investigate a business path to sustainability, there are increasing accusations of 'greenwashing' from activists and commentators. Indeed, the outgoing chair of the Environment Agency warned businesses against this in a recent intervention. On page 22, Huw Morris ponders whether businesses are talking about, but not walking towards, genuine sustainability.

I hope you enjoy this edition as much as I have. As always, please do keep your ideas and comments coming in – we love to hear from members about what articles they love, and what they would like to see more of. In the meantime, have a productive couple of months, and see you soon.

"Can you balance security of energy supply with the sort of cross-border networks needed to make the most of energy from the sun and wind?"



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IEMA is the professional body for everyone working in environment and sustainability. We provide resources and tools, research and knowledge sharing along with high quality formal training and qualifications to meet the real-world needs of our members. We believe that together we're positively changing attitudes to sustainability as a progressive force for good. Together we're transforming the world to sustainability.

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# ROUNDUP

ENVIRONMENT &  
SUSTAINABILITY  
NEWS AND VIEWS

## AGRICULTURE

### Meat and dairy facing stranded assets

**E**ight in 10 believe climate change will have an impact on the meat and dairy sector, slashing profits and leading to stranded assets. That is according to research from the Changing Markets Foundation (CMF), whose poll of more than 200 investors found that 84% believe a lack of climate mitigation could lead to stranded assets; 61% say it is a "distinct possibility", while 23% state that the risk is "very likely".

Three-quarters of respondents are also concerned about climate change affecting the availability and performance of investment products and opportunities in the meat and dairy sector, with two-fifths being "very concerned".

The more temperatures rise, the less suitable many places become for rearing livestock or growing their feed, while water stress is set to impact the sector's viability and profitability. Climate scientists believe a decline in livestock of seven to 10% may be necessary to limit global warming to less than 2°C above pre-industrial levels. However, production of red meat and dairy is projected to grow by more than 50% in the next 30 years.

The survey also found that 94% of investors believe it is important for the industry to reduce its methane and carbon emissions, with 39% considering this "critically important".

Food production is responsible for 37% of greenhouse gas (GHG) emissions and is uniquely dependent on stable climate conditions. Livestock agriculture is also the single largest source of methane, being responsible for around 32% of such emissions.

The CMF recommends that investors support agroecological and regenerative farming practices, and urges investees to develop specific methane action plans and disclose investments into methane and GHG mitigation measures.



## BIODIVERSITY

### Warning of 'silent spring' for wildlife

Sir James Bevan, chief executive of the Environment Agency, has warned of a "silent spring" for wildlife in the UK unless businesses, governments and individuals take action. The Agency found that there has been a huge fall in biodiversity during the past 100 years. Its latest study highlights that 41% of species have decreased in abundance since 1970, while 15% are now threatened with extinction in Britain.

Species-rich grasslands have decreased in extent by 97% in England and Wales since 1930, while lowland heathlands in England cover only 20% of their 19th-century extent. Habitats that have good biodiversity value are confined to small "isolated islands" in landscapes with poor biodiversity value, and are unable to support large-scale ecosystem services or species that need large habitats.



## WASTE MANAGEMENT

### UK homes throw away 100bn pieces of plastic a year

Almost 100bn pieces of plastic packaging are thrown away by UK households every year, according to an investigation by Greenpeace and Everyday Plastic. 'The Big Plastic Count' involved 97,948 homes during one week in May. On average, each household threw away 66 plastic packaging items, amounting to 3,432 items a year.

The most common items were fruit and vegetable packaging, followed by snack bags, packets and wrappers – illustrating how difficult it is for shoppers to avoid packaging when purchasing these products. If these totals are typical, UK households are throwing away 1.85bn pieces a week, or 96.57bn pieces a year.

"Pretending we can sort this with recycling is just industry greenwash," said Greenpeace UK plastics campaigner Chris Thorne. "The only solution is to turn off the plastic tap, through the government introducing a legally-binding target for a 50% reduction in single-use plastic by 2025."

## IMPACT ASSESSMENT

### Uncertain future for EIA



In May 2022, the UK government published the Levelling-up and Regeneration Bill, building on the white paper *Levelling Up the United Kingdom*. Its scope is broad, but the proposals to reform environmental impact assessment (EIA) and strategic environmental assessment (SEA) will be of interest to IEMA members.

IEMA has been following these developments since the 'Planning For the Future' proposals made in 2020 by the now defunct Ministry of Housing, Communities and Local Government. In 2021, IEMA submitted evidence to the Housing, Communities and Local Government Committee (HCLGC) inquiry 'The future of the planning system in England'; the government published its response on 12 May 2022, stating that through the Levelling-up Bill it will introduce a new framework of environmental assessment to replace the EU's EIA and SEA systems.

While the government is keen to stress that there will be no regression in protection, several organisations and individuals have doubts about the government's credentials concerning environmental protection. Its response to the HCLGC inquiry states its intention to move to "an outcome-based approach to assessment", as set out in its approach to the Environmental Outcomes Reports proposed in the Levelling-up Bill. However, no details have yet been provided on what the outcomes will be, how they will be determined or what they will cover. Therefore, it is not clear whether its environmental priorities will match those of environmental protection professionals and organisations.

Read more about the Levelling-up Bill on page 21. To follow our impact assessment and planning policy work, see IEMA's website or contact our impact assessment lead at [ia@iema.net](mailto:ia@iema.net)

## PUBLICATION



### Guidance on climate change adaptation and resilience

The climate emergency and increasing use of targets such as net zero have moved many IEMA members' work away from incremental climate change mitigation and towards transformative change. However, we need a twofold approach that encompasses both mitigation and adaptation.

While they are key practice agendas, adaptation and resilience are in many ways overshadowed by the net-zero agenda. Despite well-publicised initiatives such as the UN-backed Race to Resilience, adaptation measures and impacts may be seen as hard to quantify and less certain in timescales when compared to mitigation measures. Indeed, IEMA polling indicates that the top barriers for adaptation progress within organisations are competing priorities, often legally required or business-critical ones.

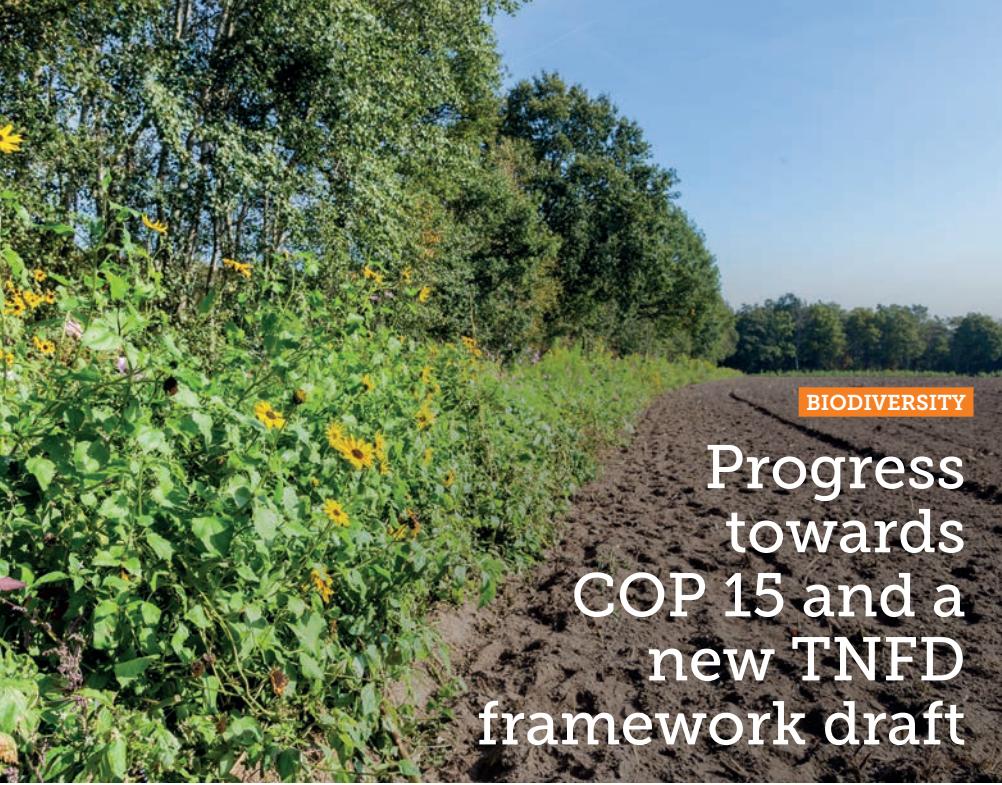
Nonetheless, climate impacts are happening and it is important that mitigation and adaptation are given

a more balanced focus. Failure to do so could result in maladaptation, or even reduce the effectiveness of net-zero interventions.

Led by Kit England, Ellie Murtagh and a specially convened working group, IEMA is developing guidance to help the profession remove barriers to implementation. Sustainability practice implicitly requires an understanding of complexity, intersectionality and approaches that can integrate between agendas. The publication will give members insights, principles and information on 'what works', helping them to navigate and bridge complexity. It will reiterate the business case for adaptation, set out an overview of the progress made and challenges faced, and put forward practical steps that organisations can take.

**The guidance is due for publication in autumn 2022. Get in touch at [policy@iema.net](mailto:policy@iema.net) if you're interested in contributing to this project.**





## BIODIVERSITY

## Progress towards COP 15 and a new TNFD framework draft

IMAGES: ISTOCK/SHUTTERSTOCK

**O**n 21 June it was announced that the Convention on Biological Diversity's (CBD) COP 15 – the UN global biodiversity conference – will no longer be held in China, instead taking place in Montreal, Canada from 5–17 December 2022. China will continue to preside over the meetings.

After several delays to the original October 2020 date, the new dates give more certainty on the progression of targets to halt the global deterioration of biodiversity.

From 21–26 June in Nairobi, work continued on the CBD's

Post-2020 Biodiversity Framework, which will include a set of around 21 biodiversity targets for parties to the convention (including the UK). Target 15 is specifically aimed at business and is the first CBD target specifically recognising business's role in reducing impacts on biodiversity.

IEMA has been working with the UK Business and Biodiversity Forum (UKBBF) to create a position on Target 15 as it develops, as well as liaising with the Department for Environment, Food and Rural Affairs (Defra) through workshops. There were a number of drafts of Target 15 before



the Nairobi meeting, and the latest (as yet unagreed) has recently been posted online at [bit.ly/CBD\\_Target15](https://bit.ly/CBD_Target15)

In further news, we are delighted that IEMA has been accepted as a Forum member of the Task Force on Nature-related Financial Disclosure (TNFD). The TNFD's risk management framework is being developed through a series of iterations leading up to final publication in September 2023, with each draft being improved by industry feedback.

The second iteration, beta version 0.2 ([bit.ly/TNFD\\_betav2](https://bit.ly/TNFD_betav2)), was published on 28 June. Core components have not changed but updates have been made based on feedback so far. These updates include an architecture for metrics and targets; draft guidance on, and an illustrative set of, assessment metrics; and additional guidance and approaches by sector or biome.

The TNFD is requesting that businesses pilot the beta version 0.2 between now and June 2023. IEMA has been working with the UKBBF and IEMA corporate members to create a working group offering a 'safe space' for businesses that wish to do this. If your business is interested in, or has already started, piloting the TNFD framework and would like to join the working group, contact [info@business-biodiversity.co.uk](mailto:info@business-biodiversity.co.uk)

## CONSULTATION

## Government response on targets

The public consultation on the government's environmental targets framework closed at the end of June. IEMA made a submission, setting out concerns.

Defra had been seeking views on a range of environmental targets covering air quality, water, biodiversity, and resource efficiency and waste reduction. Details of the full range of the targets proposed can be found at [bit.ly/EnvTarget\\_Consult](https://bit.ly/EnvTarget_Consult)

The targets are part of the new governance regime for the

management and enhancement of the natural environment, so it follows that IEMA engaged carefully. Following workshops and roundtables with members, four recommendations emerged.

First, 'apex' targets for water and resources and waste, alongside those for nature, air and net-zero carbon emissions, should be included. Second, there should be alignment of target end dates to decadal intervals, making the targets easier to communicate and to align work programmes.

Third, a target for the status of protected sites should be included, given that Defra acknowledges this as critical to achieving the species abundance target. Finally, a clear roadmap for the introduction of additional targets should be developed and the refresh of existing legally binding targets carried out accordingly.

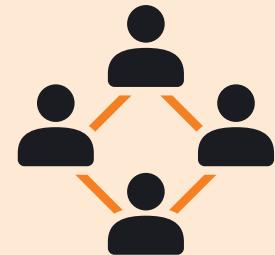
Government is required to lay regulations in parliament by 31 October to introduce the targets, so time is of the essence in

considering stakeholder views and making amendments to ensure that the framework puts the natural environment on a path to more positive outcomes.



# IEMA Connect 2022

Registration is now open for this year's **IEMA Connect event** – what can attendees expect?



This year, IEMA Connect is even bigger and bolder than before, opening with an introduction from COP26 minister Alok Sharma and spotlighting the work being done by members around the world to make change, as well as the challenges presented by the climate emergency. The need for green skills and green jobs has never been more important if we are to reach net zero or even limit global warming to 1.5°C by 2050. We will be looking at our recent report on green skills ([bit.ly/IEMA\\_GreenSkills](https://bit.ly/IEMA_GreenSkills)), produced in partnership with Deloitte, which provides individuals and organisations with guidance on how to be better equipped within workplaces and careers.

IEMA Connect will be taking place online from Wednesday 19 to Wednesday 26 October, so will be fully accessible to all IEMA members. It will feature a diverse panel of speakers from around the world and provide tailored content for everyone who works, studies or is interested in environment and sustainability; sessions are available for all levels of experience. New for this year, we will be asking members to nominate someone whose work within the environment and sustainability profession has been exceptional for our 'IEMA Champion' recognition, which we are excited to see unfold.

You'll be able to register to watch and engage in webinars, workshops, roundtables and discussion groups, all of which will enhance your continuing



**"The need for green skills and green jobs has never been more important if we are to reach net zero or even limit global warming to 1.5°C by 2050"**

IMAGES: SHUTTERSTOCK/ISTOCK

professional development. Some of the topics we'll be covering include:

- COP15
- COP27
- Green skills and jobs
- Latest policy updates and insights
- Upskilling
- Impact assessment
- Circular economy
- Biodiversity.

Alongside these, you will be able to join practical sessions from our Membership, Training, Networks and Corporate groups to discuss benefits for you and your organisations.

**Key speakers at IEMA Connect will include:**

**Chibeze Ezekiel**, co-ordinator at Strategic Youth Network for Development  
**Sophie Howe**, future generations commissioner for Wales  
**Olivia Whitlam**, head of sustainability at Siemens  
**Dr Eric Twum**, an environment, climate change and energy expert.

**Make sure to not miss out and book your place at IEMA Connect to engage with peers from around the globe – registration is now open at [www.iema.net/events/iema-connect](http://www.iema.net/events/iema-connect).**



**M**igration into the UK has been hitting the headlines again. The government's controversial policy of trying to send illegal migrants to Rwanda, the status of Ukrainian refugees fleeing the Russian invasion, and small boat crossings in the English Channel have led to discussions about what can be done to address the issue. While those fleeing Ukraine aren't doing so for climate-related reasons, many others on the move have been forced to flee homes that have become inhospitable due to the climate emergency.

The link between migration and the climate emergency is well established, but often missing from discussion within the environment and sustainability profession. The IPCC's special report on 1.5°C of global warming, released in 2018, warned that hundreds of millions of people could be forced to move if global warming hit 2°C, and researchers have found compelling evidence that the climate emergency caused droughts which led to, or at least inflamed, the civil war in Syria, forcing many to flee to Western Europe and the UK.

A US defence report released during the Obama administration described global warming as a 'threat multiplier'. This is an appropriate way to describe the impact that the climate emergency is having on people living in areas and regions that are already experiencing desertification, seawater ingress into groundwater supplies, crop failures, extreme weather and flooding. These physical phenomena relating to climate and weather place additional pressures on human systems, such as food and water supplies and socioeconomic and geopolitical relations.

Concerns about movement of people should be rooted in an understanding of power, privilege and oppression. We



TOM PASHBY: IEMA DIGITAL JOURNALIST

## The sustainability profession needs to pay more attention to the link between climate change and migration, says **Tom Pashby**

should be thinking about why people are leaving their homes and working out how to provide them with safety and sanctuary. Instead, concerns are often based around a failure to acknowledge the history of colonialism, including both the violence used to oppress occupied people and the greenhouse gases used to expand empires, which today could make vast swathes of the planet uninhabitable due to anthropogenic global warming.

There are also examples of climate-induced migration closer to home. The Welsh village of Fairbourne has been identified as unsustainable to defend due to predicted



sea-level rise, and the government has declared that, by 2052, it will no longer be safe to live there, making it the first community in the UK to be decommissioned as a result of the climate emergency.

Those living in Fairbourne now won't have to worry about UK citizenship when they do eventually leave their homes. Those coming from overseas, on the other hand, will almost certainly have to navigate Home Office bureaucracy, including asylum applications – and that's after having made life-threatening journeys across regions such as the Sahara, the Mediterranean Sea and the English Channel, the latter being the world's busiest shipping lane.

The UK has taken in refugees from across the globe over the years, but some argue that it has not taken its 'fair share' of people fleeing inhospitable environments. In Lebanon, there is one refugee for every four Lebanese nationals, while Germany accepted a million Syrian refugees under Angela Merkel's leadership. Ultimately, the environment and sustainability profession needs to spend more time and effort considering the impact of the climate and biodiversity crisis on migration.

It adds a further imperative to act urgently. And if we are to act on this issue, the sector needs to be far more diverse, bringing in people who have more direct experience of what it's like to have to flee your home due to the climate emergency.

**"A US defence report released during the Obama administration described global warming as a 'threat multiplier'"**



# A culture of innovation

**Fin Whitehouse** discusses organisational culture, and how it could be the key to successful innovation within impact assessment

**I**t has been two years since IEMA published its digital impact assessment (IA) primer ([bit.ly/IEMA\\_DIAprimer](https://bit.ly/IEMA_DIAprimer)), and while it remains a hot topic, digital tools are still not used enough within environmental impact assessment (EIA).

Innovation is the process through which ideas are produced, developed, assessed and implemented; it is not itself a 'thing', but all of these actions amalgamated. It has become an organisational imperative and a key driver for growth and longevity.

While IEMA can raise awareness of digital IA to help stimulate technological advances, the development of digital tools is beyond its remit; the onus is on organisations. The digital IA primer included a nod towards organisational culture and its role in the facilitation of innovation activities and outcomes, stating: "The availability and effective application of digital skills for EIA are influenced by organisational culture and approaches. Without a clearer understanding within management structures and processes within organisations, existing digital skills

will not be used to their full effect, and opportunities for developing new digital skills will not be fully embraced."

Organisational culture is an intangible but powerful social force. It comprises the values and beliefs that give members the behavioural norms they are expected to adhere to. Research has shown that organisational culture can influence members' behaviours beyond formal means of control, so it could be key in evoking desired organisational outcomes.

## Innovation culture

'Innovation culture' is a collection of organisational cultural values and behaviours that support innovation. To foster it, an organisation must be open to uncertainty and provide the freedom to take risks; employees need to ask for forgiveness rather than permission. Research has shown that a flexible or decentralised approach to decision-making in terms of digital technologies could foster greater risk tolerance, integrating more diverse opinions.

This would enable a more active, open approach to innovation, within which employees receive recognition for experimenting, failing and learning from mistakes. This engenders a learning orientation, which is pivotal in embedding innovation culture, pointing organisations in the direction of creating and using knowledge. Applied to digital IA, a learning orientation will improve an organisation's desire and ability to create and use digital technologies.

However, a lack of strategic intent could lead to duplication of technologies created, and thus redundant effort, so it is vital that there is top-down articulation of innovative intent. Senior people must convey a clear and stimulating strategic vision for how digital technologies should be used. When this is met with the enthusiastic bottom-up generation of creative solutions, it will lead to digital solutions that are fit for the purpose conveyed by the strategic vision.

IA professionals need to have a reactive mindset to deal with the day-to-day problems they face, but a proactive mindset is necessary to convey a strategic vision. The two are not mutually exclusive, but when articulating a strategic vision, one must adopt a holistic viewpoint and a proactive approach – not just thinking about today's issues, but also about how digital technologies can improve processes in future.

A shift in organisational culture is not a silver bullet to achieving digital IA, but it is a self-reinforcing factor in organisational life. If a conscious effort is made to embed these values into an organisation's culture, they will be useful in enhancing innovation over time. 

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at Arcadis.



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## IN COURT

# Record fine received for environmental offences

Dairy Crest Limited has been fined £1.5m for environmental offences, receiving the largest ever fine for an Environment Agency conviction in the South West.

The Agency said that the company, which makes brands such as Cathedral City cheese, had had an unacceptable environmental performance for far too long. Its Davidstow Creamery site near Camelford in North Cornwall fell well short of the expected standards in terms of its management of liquid waste, odour and environmental reporting.

The site changed its production to focus on whey processing to produce the powder used in baby milk and other products; since this change, the effluent being discharged into the River Inny has been more challenging to treat. An unacceptable level of pollution occurred as a result of the company's failures, causing significant harm to fish and other aquatic wildlife. Local residents also complained of foul odours.

The Agency prosecuted the company for offences including:

- Releasing a harmful biocide, used to clean wastewater tanks and pipework, into the river on 16 August 2016, killing thousands of fish over two kilometres
- Coating the River Inny with a noxious black sludge for five kilometres due to the release of a mass of suspended solids in July and August 2018
- Consistently exceeding limits on substances such as phosphorous and suspended solids entering the River Inny from 2016–2021
- Numerous leaks of part-treated effluent



into nearby watercourses and onto the land

- Foul odours repeatedly affecting residents over many years
- On seven separate occasions, failing to tell the Agency within 24 hours when things had gone significantly wrong on site.

Dairy Crest pleaded guilty to 21 of the 27 charges brought against it. It was fined £1.52m at Truro Crown Court and agreed to pay costs of £272,747.

Environment Agency area director Helen Dobby commented: "As a large and well-established operator, Dairy Crest Limited should be up to the job of maintaining the required environmental standards. Instead, it has over a period of many years failed to comply with its environmental permit and not been able to protect local people and the environment.

"We acknowledge that Dairy Crest Limited has been taking steps to remedy the various problems, but unfortunately these actions were not swift enough on many occasions and proved to be ineffective in stopping pollution."



**"Dairy Crest Limited should be up to the job of maintaining standards"**

## CASE LAW

# High Court rules on private companies' discharge rights

Two points have been considered in the appeal of *The Manchester Ship Canal Company Ltd v United Utilities Water Ltd*, which concerned a claim by the Manchester Ship Canal Company (MSC) against United Utilities Water (UU) in relation to discharges made into the canal.

The appeal considered two points from earlier separate cases: a 2018 case that decided discharges made into the canal by UU did not entitle MSC to private law action in trespass or nuisance, and a 2010 case that determined the effect of MSC's alleged termination of contractual licences which allowed UU to use five licensed outfalls to discharge into the canal.

Regarding the 2018 case, the judge upheld the decision against the availability of private law action, stating that it could not be distinguished from *Marcic v Thames Water Utilities Ltd*, and that to hold UU liable for trespass or nuisance for unauthorised



discharges into the canal would be "inconsistent with the statutory scheme" applicable to them.

In both cases, discharges were a result of the capacity of an inherited infrastructure being exceeded after heavy rainfall, and not something the undertakers could be held responsible for by way of a tort claim. The judge dismissed the 2018 appeal.

In relation to the 2010 case, in which the previous judge had held that UU had a continued statutory right to drain through the outfalls even if MSC terminated the agreements, the appeal was allowed. The judge stated that to accept "that the licences were valid, but the termination provisions were not, the practical effect would be ... to convert what was a precarious grant into a permanent deprivation of property. That seems to me to be a very striking consequence".

The judge was "not aware that it has previously been held (or even suggested) that the *ultra vires* doctrine can have the effect of turning a limited and determinable contractual right into a permanent one, and as far as I can see without any compensation being payable."

The 2010 appeal was allowed.

# NEWREGULATIONS

## THE LATEST

### ■ LEGISLATION ■ GUIDANCE ■ CONSULTATION



#### LEGISLATION

##### **Climate change**

Northern Ireland's first climate change law has been published after Stormont passed the Climate Change Act (Northern Ireland) 2022, which includes a target for net-zero emissions by 2050 and a set of interim targets on reducing greenhouse gas emissions for 2030 and 2040. It also establishes carbon budgets and appoints a climate change commissioner.

[CEDREC](https://cedr.ec/8ep)

replace Annex 1, which sets out the list of chemicals subject to export notification procedure, qualifying for PIC notification and subject to the PIC procedure. They also replace Annex 5, which sets out the chemicals and articles subject to export ban.

[CEDREC](https://cedr.ec/8ep)



#### CONSULTATION

##### **Chemicals**

Two consultations on proposed restrictions under Retained Regulation 1907/2006, on the Registration, Evaluation, Authorisation and Restriction of Chemicals (UK REACH) have been launched. They relate to risks posed by lead shot in ammunition, and substances that pose a risk to human health if present in tattoo inks and permanent make-up.

[CEDREC](https://cedr.ec/8en)



#### LEGISLATION

##### **Planning**

The government has published the Levelling-up and Regeneration Bill, which aims to reduce disparities and improve equality. It also contains provisions aimed at altering the planning system to promote regeneration and delivery of homes. The Bill is underpinned by the desire to support struggling towns and cities, and to help local leaders take back control of regeneration, find tenancies for vacant high street shops and deliver quality homes.

[CEDREC](https://cedr.ec/8fm)



#### CONSULTATION

##### **Circular economy**

A new consultation sets out the Scottish government's proposals to develop and legislate the circular economy in Scotland through the Circular Economy Bill.

[CEDREC](https://cedr.ec/8eo)



#### LEGISLATION

##### **Hazardous substances**

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) (Amendment) Regulations 2022 amend the main RoHS Regulations 2012 to introduce three new exemptions from restriction concerning the application of Bis(2-ethylhexyl) phthalate, butyl benzyl phthalate and diisobutyl phthalate in certain types of medical devices, and in spare parts recovered from and used for repairing or refurbishing medical devices.

[CEDREC](https://cedr.ec/8eq)



#### GUIDANCE

##### **Packaging waste**

Guidance has been published in preparation for extended producer responsibility (EPR). The way UK organisations responsible for packaging must carry out their recycling responsibilities is changing. If you're affected by EPR for packaging, you must take steps to collect the correct packaging data from 1 January 2023. This guidance sets out information on who needs to act, what you need to do, and collecting and submitting your packaging data.

[CEDREC](https://cedr.ec/8es)



#### CONSULTATION

##### **Waste management**

The Environment Agency seeks views on proposed changes to the standard rules in relation to waste management. The changes aim to consolidate rule sets for non-hazardous waste, change generic risk assessments for new rule sets, change the proposed standard rules application and subsistence charges, revise rule sets for metals recycling, and revise the standard rule SR2010 No 3 relating to the discharges to surface water and distance criteria to foul sewer.

[CEDREC](https://cedr.ec/8er)



#### LEGISLATION

##### **Prior Informed Consent**

Regulation (EU) 2022/643 amends Regulation (EU) 649/2012 on the export and import of hazardous chemicals (Prior Informed Consent [PIC]). The amendments

A large, mature tree with a dense canopy of green leaves against a bright sky.

Interview

# A wild idea

***Isabella Tree*** talks to Chris Seekings about the amazing success of the Knepp Wildland project, and the vast array of ecosystem services that rewilding can provide for the UK and beyond



**A**cross 3,500 acres lies a plot of land where large herds of free-roaming animals live side by side, surrounded by an abundance of rare species, overarching trees and dynamic, natural watercourses. While this may conjure up images of the Serengeti or the Amazon rainforest, this hotspot of biodiversity can actually be found in a quiet corner of West Sussex, where a pioneering rewilding project has turned traditional ideas of conservation on their head.

Once an unprofitable arable and dairy farm, Knep Wildland is now recognised worldwide as an outstanding example of landscape-scale restoration, where an abundance of plant and animal species thrive and provide numerous ecosystem services. One of the UK's most famous rewilders, Isabella Tree, explains how she and her husband, Charlie Burrell, turned some of south-east England's most depleted land into a haven for wildlife – and how others can follow their unconventional path.

### A brave decision

Tree, an accomplished author and travel journalist, explains that her early childhood and experiences abroad inspired her interest in the natural world. "I am lucky enough to be of a generation when it was quite normal for children to run feral and just disappear from home for hours with their friends, building dens and dams and things, so for me, growing up in nature was completely normal – my parents called it 'the school of benign neglect,'" she says. "When I began as a journalist in my twenties I did a lot of travel writing and wrote for geographical magazine with an environmental angle, so I've always had an interest in wildlife and nature."

In 2000, Burrell was struggling to make a profit from a 3,500-acre farm just south of Horsham that he had inherited from his grandparents, and eventually decided to sell its herd and farm equipment to clear mounting debts. "We're on marginal land with very heavy clay, and it took about 17 years to realise that we could never actually be profitable, so he made this decision for financial reasons," says Tree.

Two years later, inspired by the Netherlands' Oostvaardersplassen nature reserve, the couple decided to establish a 'hands-off' naturalistic grazing system across the estate. "It was a brave decision because it went politically against the grain, as it was so instilled in our culture and in Charlie's family that we should be farming," Tree says. "We met the Dutch ecologist Frans Vera, whose theory of using free-roaming large



"We knew we had to do something with the land that was going to work with it, rather than battling against it"

herbivores to drive habitat creation completely clicked with us."

They introduced herds of old English longhorns, Exmoor ponies and Tamworth pigs, as well as red and fallow deer – and watched as a transformation unfolded over 20 years. "People thought we were mad, and plenty of local farmers and neighbours thought we were being irresponsible and lazy," Tree recalls. "We were even called unpatriotic for not doing our bit for Britain by stopping food production, but we were very attracted to this idea that, in a rather low-cost, straightforward way, you could introduce free-roaming animals onto depleted post-agricultural land, and they could start regenerating the soil and creating habitat if you just sat back and left them alone."

### Total transformation

The Knep Wildland has since seen an extraordinary increase in wildlife, with rare species such as turtle doves, nightingales, peregrine falcons and purple emperor butterflies now breeding, and more common species seeing their numbers rocket. "When I was growing up, we had 250,000 turtle doves in Britain; now we have just a few thousand, and the RSPB believes that it's going to be one of the next species of bird to go extinct from our shores in the next 10 or so years," Tree says. "We have lost them because of our loss of

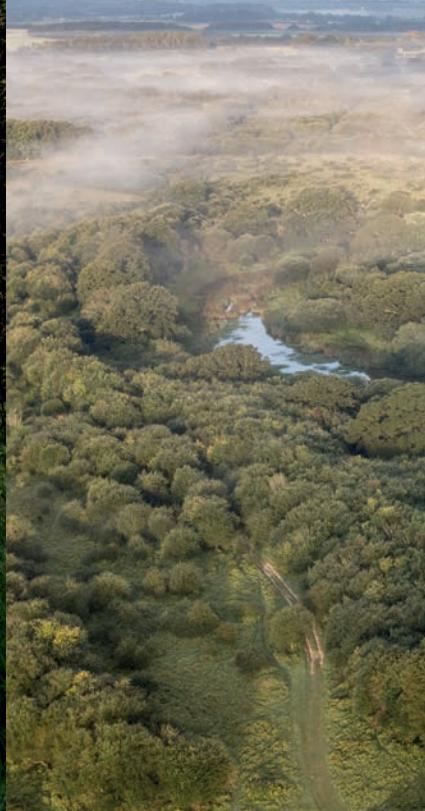


# Interview

IMAGE [RIGHT]: JACK HILL



**"We're sequestering carbon, cleaning the air and water, and mitigating events like floods"**



habitat, and so to suddenly find one of our rarest birds breeding at Knepp within 10 years was astonishing. We're probably the only place in the UK where turtle dove numbers are rising."

In 2009, ravens nested at Knepp for the first time in hundreds of years, and 13 out of a total of 18 UK bat species were recorded that summer, along with 60 invertebrate species of conservation importance and 76 additional species of moths. In 2016, a black stork (one of the rarest birds in

Western Europe) was spotted, while white storks were observed raising chicks at the site in 2020 following a reintroduction project – the first time this had been seen in the UK for 600 years.

These are merely a few of the highlights recorded during the past couple of decades; just comparing historic footage of the site to aerial photos today shows the scale of the transformation. "We knew we had to do something with the land that was going to work with it, rather than battling against it all the time," Tree says. "This idea was to see whether we could increase biodiversity across the board, with free-roaming animals transporting nutrients and seeds around the landscape to kickstart these natural processes."

Despite wanting to 'let nature do its thing', there are times when it is necessary to intervene. Too many browsing and grazing animals and you end up with ubiquitous grassland; too few, and you get tree recruitment and eventually close-canopy woodland,

which is also bad for biodiversity. "You have to cull animals so you get the right numbers to allow vegetation to carry on growing, and create a battle with the herbivores that neither side wins. That's when you get that complexity and mosaic of habitats, which is what benefits wildlife."

## Natural services

Culling these animals is what's responsible for the small quantity of food still produced at Knepp, which Tree describes as a "by-product of nature". "We've moved from producing food intensively to producing different things that the public desperately needs," she says. "We're sequestering carbon, cleaning the air and water, and mitigating events like floods. These are ecosystem services, or 'public goods'. Another public good, of course, is access to nature. And we know, especially post-COVID-19, how important this is for human health and wellbeing. Rewilding is about the production and restoration of nature, with food production as a by-product. We produce meat because we cull these free-roaming animals to keep a low stock density in order to maximise conditions for biodiversity."

One of the most obvious examples of how the restoration of natural habitats at Knepp Wildland has provided ecosystem services has been shown this year through the introduction of beavers. While a previous attempt in 2020 was unsuccessful, a pair was introduced in March this year, and both are thriving. "They've already built three dams and increased the open surface water area by an acre, at least. There are rivulets and channels, and huge examples of hydrological engineering going there, and we've already had a turtle dove in their pen – it's amazing how much they can do in just a few months."



Dams are important for flood mitigation because they hold water in times of floods and then release it slowly throughout the year. "It's protecting farmland downstream from us, and also holding onto the water and replenishing the water table," she explains. "Beaver ponds also start cleaning pollutants out of the water, which is extraordinary, and can save water companies huge costs by removing the nitrates and the pollutants. You also have a lot of woody debris in the water that the beavers collect, which provides a protective habitat for places where aquatic invertebrates and fish can live without predation. Then you've got all the knock-on effects for wildlife, with kingfishers, heron and other birds eating the insects that are being regenerated by those static water pools. So beavers are a completely extraordinary keystone species."

Around 350 acres of land was never used for rewilding due to its proximity to a nearby village. Tree and her husband recently decided to start a regenerative agriculture project on the land to show how it can work in tandem with rewilding. "Particularly on marginal land like ours, rewilding can provide the life support system that agriculture needs for the future in the UK so it's going to be sustainable and productive," she says. "We know that if you have areas of nature around even our intensive chemical farmed areas, that actually increases yields because you're providing the pollinators for the crops and you're also providing natural pest control."

## Rewilding for all

There are around 85,000 hectares of rewilding projects in the UK, many inspired

by Knepp, while others are looking to replicate its success abroad. However, Tree says that funding is a big issue for people who are looking to start projects, and explains how government support for the environment always gets slashed in times of political and economic crisis. "It's very short-term thinking," she says. "But I think the new farming subsidy scheme will help because farmers will be rewarded for regenerative farming, soil restoration and other positive things for nature. But the game changer is going to be the private sector, because there is now going to be money from biodiversity credits and carbon credits as companies look to offset the damage they do. Rewilding Britain wants to see 300,000 hectares of land rewilded by 2030, and that's actually not a big ask – it's the same amount of land currently used by golf courses!"

As for future projects, Tree has recently become involved with the London Rewilding Taskforce, which intends to deliver rewilding projects on the outskirts of London, potentially including microparks and nature corridors alongside train lines. She is also has a book due to come out in April 2023, *The Book of Wilding*, which includes a chapter on urban rewilding. "If you're thinking about rewilding a river that goes through a city, for example, then you have to think about the landscape at scale, and how raindrops fall on the mountains, and all the farmland that goes along the river before it even reaches the city, which may be in an estuary on the coast – it's thinking about how to connect all these areas together. We have lots of nature reserves in London, but they're very isolated, and if we can use green space to connect them and start to have green roofs and green sides on our buildings as the default for architectural design, it's going to have enormous benefits for insects, birds and small mammals, as well as clean the air and lower the street temperatures in summer."

Tree is keen to emphasise that rewilding can also have benefits for people, not least in returning a sense of engagement with nature, and agency over our future. "In this age of eco-anxiety, doom and gloom, and all these massive problems we're facing, it's catastrophic. As an individual, you think: how can I do anything? You go into a tunnel and feel impotent and meaningless. But what excites people when they come to see Knepp is that positive message of hope, with what was virtually a biological desert 20 years ago, springing back to life so quickly. It really galvanises people to think of what they could do, because rewilding really is for everyone."



**"Rewilding can provide the life support system that agriculture needs for the future so it's going to be sustainable and productive"**

# A Meaty Challenge

**David Burrows**

examines the cultivated meat industry and asks: is it as green as it claims?

The fifth of August is unofficially 'international cultivated meat day'. On that day in 2013, Dutch food tech company Mosa Meat unveiled the first burger made from meat grown in a lab rather than reared on land; it cost €250,000 (£217,000). Nine years on, interest in cultivated meat (and seafood) has blossomed. Last year, companies secured US\$1.4bn (£1.2bn) in investments, three times the figure in 2020 – a year that ended with

Singapore becoming the first country to approve a lab-grown product (chicken nuggets).

Almost 7,000 miles away, in Scotland, a team of scientists is working on producing cells for a sector that promises so much – zero animal suffering, and considerable reductions in greenhouse gas emissions, water and land use – but has yet to deliver a burger to British barbecues. "Singapore and the US are viewed as the fast track for cultivated meat," admits John Clinkenbeard, chief operating officer at Roslin

Technologies – but, he adds, there is an opportunity on the back of Brexit for the UK to “lead the way in foodtech”.

Roslin, situated on the outskirts of Edinburgh, right next to the world-famous Roslin Institute, is the first cultivated meat company to win a UK government grant (£1m from UK Research and Innovation in 2021). “We have really high-quality cells that live long, grow fast and are genetically stable, and those are key ingredients for cultivated meat,” explains CEO Ernst van Orsouw.

As we sit chewing the fat in the on-site café, van Orsouw, Clinkenbeard and chief scientific officer Jacqui Matthews deliver a strong pitch for cultivated meat – so strong that it’s hard not to be carried away by their enthusiasm for this concept. So how does it work, and is it a silver bullet, as some media and investors suggest? What’s more, how soon will it be available in our supermarkets and restaurants?

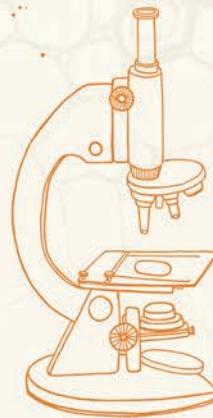
### British brains (and cells)

Roslin sits at the start of the cultivated meat supply chain. A sample is taken to obtain cells from an animal, Matthews explains, and these are isolated and cultured in the lab. Specifically, Roslin is working with ‘pluripotent stem cells’ – cells that can be turned into any animal cell type, including muscle and fat cells, and which can self-replicate indefinitely without deterioration. These traits make them ideal for large-scale and more efficient production of cultivated meat, the company claims.

However, this facility won’t actually be making burgers, brisket or bacon. Rather than invest in all the downstream processing and infrastructure needed to become a producer, Roslin wanted to “concentrate on what we’re good at” by focusing on the cells and making them available to everybody in the industry, says van Orsouw. “We are the ‘intel inside’ of the cultivated burger,” adds Clinkenbeard.

The company has had success with pigs and is now working to perfect the process and replicate it for ruminants; it is “very, very close” with lamb. As we tour the facility, some of the researchers are adapting the feed used to grow the cells, while others are assessing the quality of cell batches under microscopes and monitoring their growth. Everything from carbon dioxide to lactate – the substance produced when you run – is assessed to ensure that the final, frozen package does exactly what it says on the vial.

Indeed, the few millilitres (and couple of billion cells) in each vial delivered to companies in Europe, the US, Asia and Middle East could potentially produce massive amounts of meat in the future. However, just giving



**“Those cells need special attention. You need to know how to feed them and how to grow them”**

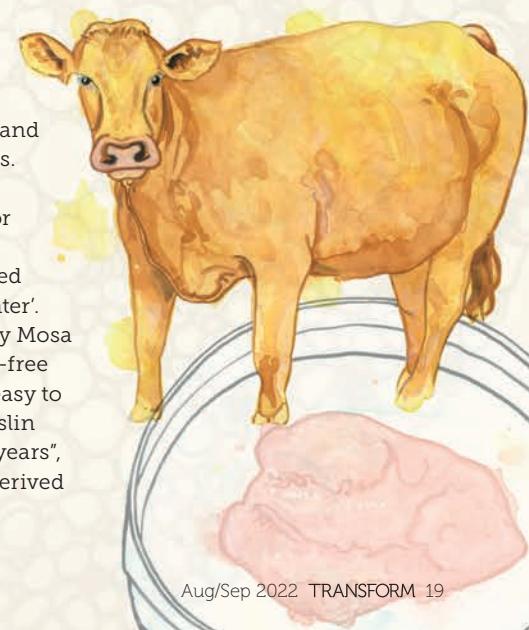
them the cells and saying ‘good luck’ doesn’t work. “Those cells need special attention,” explains van Orsouw. “You need to know how to feed them and how to grow them.” That’s why his team “does on a small scale what our customers will do at large scale”.

### Pies and profitability

Forecasts suggest there could be 1.5m tonnes of cultivated meat being produced by 2030, by which time global meat supply is forecast to have hit 374m tonnes. Achieving that will require somewhere between 200m and 440m litres of fermentation capacity, according to consultants at McKinsey. That’s an awful lot of bioreactors in which to ‘grow’ the meat from the cells.

This next stage is often likened to brewing, with a series of ‘cultivators’ mimicking what happens inside an animal. The cells are fed an oxygen-rich cell culture medium made up of basic nutrients such as amino acids, glucose, vitamins and inorganic salts, and supplemented with proteins and other growth factors. This is where the immature cells are triggered to “differentiate into the skeletal muscle, fat, and connective tissues that make up meat”, notes the Good Food Institute (GFI), a non-profit that promotes cell and plant-based protein alternatives. The differentiated cells are then harvested, prepared and packaged into final products. According to the GFI, this process is expected to take two to eight weeks, depending on the type of meat being cultivated.

This is efficient, but also eye-wateringly expensive – and not without ethical questions. Most of the media include foetal bovine serum (FBS), for example, which presents an issue for claims that cultivated meat is ‘meat without slaughter’. Recent research published by Mosa Meat shows promise for FBS-free cultivated meat, but it’s not easy to wean cells off the serum. Roslin hasn’t used FBS “for several years”, but does use some animal-derived products in its media.



# Sustainability



In 2021, cultivated meat companies secured £1.2bn in investment



Forecasts suggest there could be 1.5m tonnes of cultivated meat being produced by 2030



Only 30% of UK consumers feel lab-grown meat is safe to eat

This 'feed' for the cells doesn't come cheap, but it's getting cheaper. As the industry scales and processes are optimised, prices could fall – although how far is hotly debated. Some companies are making bold claims about their route to price parity with conventional meat. The figures in the press are "amazing" says Illtud Dunsford, CEO and co-founder at Cellular Agriculture, but his own modelling suggests it will be "10 to 15 years before we get anywhere near a maturity where we're looking at some form of parity".

Dunsford is developing bioreactors. His fibre membrane technology is 1/200th of the scale of existing industrial technology, and operational costs are 70% lower. The route to market is a marathon, not a sprint, he says: "We're probably another four years away from us having the technology on the market, but our focus is very much on scale and not on immediate access to market."

McKinsey has said the focus of the next decade "will likely be on proving commercial viability, with modest market penetration" and that "tens of billions of dollars" need to be spent to take even that 1% sliver of the market.

Is it worth it? "It's impossible for the UK to reach net zero by 2050 without addressing emissions from our food system," GFI Europe policy manager Ellie Walden told MPs and government officials at a UK parliamentary event

in May. Exact figures on the environmental benefits of cultivated meat are hard to come by and much debated. Research by think tank Chatham House and the University of Oxford suggests cultivated meat is not, *prima facie*, climatically superior to meat. Much depends on the energy used to feed those bioreactors.

Netherlands-based consultancy CE Delft's 2021 lifecycle assessment of cultivated meat, using industry data and involving Singapore's agency for science, technology and research, modelled how cultivated meat may be produced by the year 2030. The result: the products beat beef on a single environmental score spanning global warming, land use, water consumption, fine particulate matter formation and human toxicity. However, they do not beat chicken or pork – or plant-based alternatives such as tofu.

Switch to sustainable energy, though, and cultivated meat beats all of its traditional counterparts. It also competes with pork and chicken on greenhouse gases alone if over 30% of the energy comes from sustainable sources. "There are some huge technological challenges for us to overcome to produce something that is comparable to meat at a significantly reduced impact," says Dunsford. "We'll get there, it just takes time."

## Winning people over

The mindset shift needed to take us to a world in which (some) meat is lab-reared will also take time. Only 30% of UK consumers feel it is safe to eat, according to research by the Food Standards Agency in January. For insects it's 50%, while for plant-based proteins it's 77%. Still, more were more willing to try cultivated meat than crickets (34% versus 26%).

"This business is not for the faint of heart," Josh Tetrick told Politico earlier this year. "It requires a ton of upfront capital before you see revenue. Tetrick is the co-founder and CEO of Eat Just, the company behind those nuggets, which is attracting huge investment. In June it announced Asia's largest plant for producing lab-grown meat.

Back at Roslin we reach the 'kitchen', where products such as sausages made from a mix of cultivated meat and vegetables have been cooked up. The investors "love" this part of the lab, says Matthews. Due to food safety regulations, the goodies can't be eaten yet. That won't have changed by August 5, but we're unlikely to have to wait another nine years for that first bite. T

**"There are some huge technological challenges for us to overcome to produce something comparable to meat at a significantly reduced impact"**

# Next level

**Steven Pearson** takes a closer look at the content of the Levelling-up and Regeneration Bill

In September 2021, the Department for Levelling Up, Housing and Communities began work, signalling its intent to reduce UK inequality.

Shortly after, it put the brakes on an ambitious planning system reform set out in a white paper only a year previously.

Rumours spread that the Planning Bill setting out widespread systemic changes would not see the light of day, confirmed by the Queen's Speech on 10 May 2022. Instead, planning reform would be folded into a new Levelling-up and Regeneration Bill, designed to tackle geographical disparities across the UK and alter the planning system in aid of this endeavour.

The Bill's proposed changes to the planning system don't quite resemble those put forward in 2020, but some interesting proposals to have emerged.

## Planning reform

Proposed planning reform includes provisions that empower local leaders to regenerate areas and improve the local process to produce plans that guide local development, while also increasing the importance of such plans in the decision-making process. Further powers are given to hold a 'rental auction' to find tenancies for high street premises that have been vacant for over a year. The proposals also give more planning rights to communities, including via 'street votes' that would allow residents to propose and vote on development on a street.



All of this will be set against a backdrop of easier-to-make local plans with an increased focus on environment, locally agreed design codes on favoured styles, layouts, materials and use of green space, and an infrastructure levy that will see developers contribute funds to improve, maintain and develop an area's infrastructure. The levy will be mandatory across England, unlike its predecessor, the Community Infrastructure Levy, which will only remain in Wales and Greater London.

## EIA to be replaced?

While the Bill's primary focus may be planning reforms and levelling up, Part 5 of the Bill is noteworthy. It proposes an Environmental Outcomes system to replace the system of strategic environmental assessments (SEA) and environmental impact assessments (EIA), which were derived from the EU's 2001 and 1985 Directives.

The proposed system aims to introduce a simpler process against which plans can be assessed to see a project's impact on the environment. Regulations will set out specific environmental outcomes as the basis of assessment. Environmental Outcomes Reports will have to be made

in relation to certain proposed consents and plans, ensuring the new system is an outcome-based approach in which anticipated environmental effects are measured against nationally-set, tangible environmental outcomes.

An Environmental Outcomes Report should assess the extent to which a plan would impact the delivery of outcomes, and how to monitor its impact on delivery of an outcome. It should also specify steps required to increase the extent to which an outcome is delivered, and steps needed to avoid, mitigate, remedy or compensate for cases when there will be a failure to meet an outcome.

The government states: "This approach will ensure there is a clear focus on protecting our environment, pursuing positive environmental improvements and providing clear join-up between strategic and project scale assessments." The Bill also requires the Levelling Up Secretary to ensure the new system does not reduce environmental protection.

Most of the Bill's finer detail will be published in future regulations, so it is hard to know exactly what the new system will entail. This means waiting for more information through a consultation, statement or draft regulations.

## Next steps

The Environmental Outcomes system will be subject to consultation, giving professionals the chance to scrutinise it. The Levelling-up and Regeneration Bill had its first reading in the House of Commons on 11 May 2022, with a second reading on 8 June 2022. The Committee Stage is now ongoing, during which detailed analysis will take place and appropriate amendments will be made. This will continue until late September.

While there is a long way to go until the Bill receives Royal Assent, and potentially several amendments made as it makes its way through the Houses of Parliament, the government intends to implement the Bill's planning changes by 2024. T

**STEVEN PEARSON, PIEMA** is a legal author and consultant at Cedrec Information Systems.



Supply chains are under pressure to achieve sustainability – but business leaders are paying lip service while clouds gather on the horizon, says **Huw Morris**

# Coming clean

The EcoVadis Sustain conference, held in March, marketed its conversation with Paul Polman as a 'fireside chat' – an opportunity for a leading industry figure to offer words of wisdom to invigorate delegates offline. But his message to the conference, which focuses on sustainability and procurement and involved over 3,200 participants from 77 countries, was anything but cosy.

Polman is a former Unilever chief executive, champion of sustainable capitalism and co-author of *Net Positive: How courageous companies thrive by giving more than they take*, awarded 'best business book of the year' by the *Financial Times*. He told the conference that many companies' net-zero policies are locked in "corporate social responsibility mode", which he described as "doing less bad, 'let's cut our carbon emission a little bit, let's cut our deforestation a little bit, let's cut our plastics in the oceans a little bit'.

"But in a world that already has overshot tremendously its planetary boundaries, less bad is still bad," he went on. "It's not good enough. I used to kill 10 people, now I only kill five people – am I a better murderer? We need to change our mindset from being less bad to being sustainable. But net-zero doesn't do it any more, either."

"The net-positive companies take responsibility for their total impact on



## The procurement view

The Chartered Institute of Procurement and Supply (CIPS) points out that much of the UK's carbon footprint is generated in supply chains abroad, mostly in extraction of raw material, manufacturing and transport. However, when it surveyed members on sustainability last September, just 59% thought their companies would meet the UK's net-zero target by 2050. Around 19% of supply chain managers were not involved in sustainability planning, 43% were slightly involved and 18% were unaware of any corporate sustainability strategy.

Just under half (48%) did not believe their organisation was transparent about sustainability, and 19% did not know how sustainable their products were. In one crumb of comfort, just 5% felt that their marketing actively misled customers or clients.

"The choices UK businesses make ripple through their supply chains to impact everything from water security and carbon emissions to waste management and deforestation in other countries," says CIPS chief executive Malcolm Harrison. "Much of an organisation's environmental impact will be outside their internal boundaries, and it is important that organisations understand this complexity so they can begin to track, communicate, and address the sustainability of their own unique supply chain."

The survey also revealed that 11% of supply chain managers said their companies had done nothing to improve sustainability since 2019, when the UK government set a target of reaching net zero by 2050.

society and all consequences, intended or not. Companies that are positioning themselves on this net-positive path will be doing well. The ones that don't, increasingly, will be heading towards the graveyard of dinosaurs."

## A lower priority

Polman's warning is falling on deaf ears. According to a study by training provider Skill Dynamics, UK procurement and supply professionals want to prioritise sustainability, but business leaders are pulling the rug from beneath them.

Although 97% of companies are introducing sustainability initiatives, only 54% have clear targets. Nearly a third – 31% – of procurement and supply executives complain of conflicting objectives, with efficiencies and growth put above sustainability.

Two thirds of procurement and supply executives entered the profession in order to drive sustainability improvements, but business leaders' demands for a return on investment left 59% falling "back into old habits of prioritising cost", according to the study.

"This is a real roadblock, as many of the returns on sustainability initiatives are hard to quantify, taking the form of reputational gains or business longevity," says Omara Khan, professor of supply chain management at Royal Holloway, University of London, who co-authored the study. "Professionals are clearly

struggling to bypass this, so fall back into old habits of prioritising cost in decision-making."

While many companies acknowledge sustainability's importance, 59% of procurement executives did not have carbon-cutting initiatives in place, which the study says is alarming given that supply chain emissions can make up 95% of a business's emissions. "Are businesses really trying to be green – or are they picking and choosing easy-to-do sustainability initiatives that will look good, but not necessarily achieve much?" asks Skill Dynamics chief executive Sam Pemberton.

## The investor influence

The findings reinforce those of a survey carried out by the procurement sector's professional body last autumn (see 'What procurement professionals think', left). However, companies that ignore the issue are playing with fire. Another study by procurement specialist Proxima looked at UK and US business investors' opinions on supply chain sustainability – and boardrooms should take note.

A total of 97% of investment managers examine a business's supply chain sustainability standards before making funding decisions. Most (84%) see low supply chain sustainability and environmental, social and governance (ESG) standards as a financial threat, and 89% discuss such standards with the companies they back, with 37% holding such conversations frequently.

Investors most commonly look at suppliers' audits (39%), data reporting procedures (37%) and analysis of financial reports (37%). Proxima says these responses suggest that, while there is action, a lack of common adopted assessment methods and standards is a roadblock to supply chain sustainability.

Nevertheless, 85% of investment managers believe that businesses without supply chain sustainability standards will see their share prices tumble in the next decade. "A sustainable supply chain is no longer a 'nice to have,'" Proxima says. "Investors will be looking for real, measurable results and businesses will need to be ready to show them." 

**HUW MORRIS** is a freelance journalist.



## Raw materials – a global worry

A new report from the World Bank Group, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*, states that the production of minerals such as graphite, lithium and cobalt will need to increase by nearly 500% by 2050 to meet the growing demand for clean energy technologies. It estimates that more than three billion tonnes of minerals and metals will be needed to deploy the wind, solar and geothermal power, and the energy storage, required to limit temperature rises to less than 2°C.

One cause for concern is the transition to electric vehicles (EVs). In June 2021, the US government issued preliminary findings from a major review of the supply chains that provide critical goods to government and industry, including high-capacity lithium-ion (Li-ion) batteries and the minerals and materials used in EV battery production. The US is aiming to secure the upstream supply of 35 critical minerals in the production of leading-edge technologies, including the cobalt and lithium essential for Li-ion battery cathodes. In September 2020, the European Commission issued an Action Plan on Critical Raw Materials, which lists cobalt and lithium as essential to the EV supply chain and other technologies. Japan and Canada also identify nickel as a critical mineral.

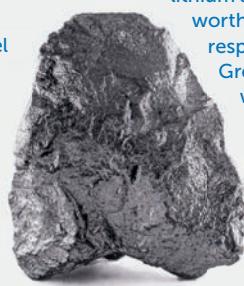
A study by the Belgian university KU Leuven found that hitting the EU's 2050 net-zero goal will require 35 times more lithium and up to 26 times more rare earth metal than Europe

uses today. This is where sustainability and environmentalism collide with geopolitics. Cobalt, lithium and nickel are exposed to a range of supply chain risks because their production and processing are geographically concentrated in and dominated by jurisdictions with poor labour and human rights, such as China.

China controls 60% of global mine production and 40% of rare earth metal reserves. Without action, this poses significant supply chain risks to the UK's green industries, according to the Green Alliance, which predicts that the UK will exceed its per capita share of critical raw material reserves by 2050. We can limit this threat by boosting domestic recycling and cutting energy use.

Improving freight efficiency, insulating homes, and increasing car sharing, public transport and active travel could help the UK halve its total use of certain critical resources by 2030 compared to the current trajectory, the Green Alliance says. If we rapidly scale up the recycling of green products and their components, almost all the UK's critical raw material demand for EV batteries, wind turbines and solar panels could be met by secondary materials by 2050.

In 2019, the UK's small fleet of EVs contained more than 1,400 tonnes of lithium and 800 tonnes of cobalt, worth £26.3m and £31.5m respectively. According to Green Alliance, that volume would be enough to make 220,000 battery electric cars – 10% of projected new sales in 2035 – if it was recycled. The UK is set to publish a critical minerals strategy this year.



# Staying power

**Beatrice Mocci**

discusses the need to link the price of carbon removal methods to the permanence of the carbon store

Things are warming up – literally. The Met Office's climate models estimate that there is an almost 50-50 chance that the world will briefly overshoot its crucial 1.5°C climate target within the next five years. Large-scale permanent carbon dioxide removal (CDR) is needed by 2050 and beyond, in addition to emissions reduction efforts. This presents opportunities and challenges for the voluntary carbon market.

## CDR methods and permanence

Up to 10 gigatonnes of carbon dioxide ( $GtCO_2$ ) must be removed annually by 2050, increasing to 20 $GtCO_2$  by 2100. However, the supply of CDR methods

that can viably remove and store carbon is small compared to what is needed. Techniques include natural strategies such as tree planting and agricultural soil management; high-tech strategies such as direct air capture and enhanced carbon mineralisation; and hybrid strategies such as bioenergy with carbon capture and storage, and ocean-based carbon removal.

To ensure the supply of high-integrity CDR credits, the market must deal with the issue of permanence. Carbon storage durability differs widely between methods, from short-to-medium-term or temporary (such as soil sequestration, afforestation/reforestation and biochar) to longer-term or effectively permanent (such as geological and mineralisation).

The issue is compounded by a lack of standardised methodologies and robust monitoring, reporting and verification

(MRV) protocols, which would give buyers of CDR credits more certainty over performance. Instead, the market is responding. Ratings systems such as Sylvera or BeZero Carbon provide greater clarity and guidance on credit quality, including projected minimum permanence thresholds. Others, such as CarbonPlan, are building open-source research tools that estimate the long-term cost of temporary and permanent CDR, helping buyers understand the upfront and ongoing costs.

Some progressive corporates, such as Klarna and Stripe, are championing the potential of CDR methods. Although there is no regulatory requirement for corporate CDR activity, there is a tangible business case for it, which takes in the shifting regulatory landscape, consumer and shareholder pressure, the avoidance of reputational damage, and better alignment with corporate emissions targets. There is also a compelling reason to be part of the CDR story, in terms of supporting research, development and deployment, and scaling its use.

A key criterion for high-quality CDR credits is permanence, so most nature-based projects that sequester carbon for less than 100 years are not selected by these progressive corporates. Instead, they are ready to pay premium prices for methods that offer higher levels of permanence and have no obvious immediate financial return, other than locking in reduced future prices.

We need more knowledge and certainty around CDR methods, so we can ensure credits are valued accordingly. A limited set of data points does suggest a correlation in the current market between the price of CDR credits and their level of permanence, with higher certainty of permanence commanding higher prices – though it is not a linear relationship. However, we need more data and more precise durability measures. As the market scales, costs are expected to fall and the price of CDR credits

**"Progressive corporates are ready to pay premium prices for methods that offer higher levels of permanence"**

associated with high permanence will become (relatively) more affordable.

For scaling to happen, we need governance (rules and institutions) to facilitate more consistent and thorough comparisons (particularly between temporary and permanent storage methods) – for example, regulation of accounting rules. This could become a central component in corporate decision-making, whereby CDR credits are valued based on permanence of storage and buyers are incentivised to adopt a portfolio approach in order to safeguard against risks.

This bottom-up development of the CDR market, supported by policy interventions, is expected to drive important technological and socio-environmental learnings, ultimately reducing uncertainties around CDR.

**Improving the CDR landscape**  
Corporate decision-making plays a central role in CDR activity, so it must be driven by transparent and scientifically rigorous data. A lack of systematic oversight could pose a challenge.

Voluntary carbon market initiatives currently offer inconsistent and blurry guidance, separating permanence into two camps: one where the risk is much lower (for example geological storage and carbon mineralisation), meaning a net-zero claim can be deemed credible, and another in which temporary storage is less favourable but can achieve co-benefits. However, devaluing, say, forestry, because of issues related to

# Pollution

non-permanence, potentially undervalues its ability to store carbon in a shorter amount of time and with reasonably high certainty – at a time when CDR is urgently needed to avoid ‘tipping points’.

The Taskforce for Scaling the Voluntary Carbon Market is expected to place increased emphasis on the integrity of carbon credits. Later this year, its Integrity Council is expected to outline standardised governance principles, including detailed rules around permanence. Interviews with project developers, verification bodies, ratings agencies and marketplace providers, as part of a research project carried out on behalf of the University of Edinburgh and Ecometrica, indicate consensus that the CDR landscape would benefit from a deeper focus on the following themes:

**1** The lack of governance in the market, and multiple methodologies for different methods, add extra complexity for corporate buyers. More standardisation would ensure consistency, certainty and credibility.

**2** To provide greater transparency, more robust monitoring, reporting and verification protocols are needed for each CDR method, in parallel with early demonstrations.

**3** Certification providers are failing to keep pace with the market, leaving project developers and corporates to trailblaze new CDR methods. Ratings systems have emerged to fill this governance gap and provide transparent CDR project comparisons, with permanence being a key criterion.

**4** There is demand for strict CDR regulations, as the current systems fail to provide global oversight. Monitoring ambition and performance, as well as risk and disclosure, could also ensure that innovation aligns with scientifically rigorous evidence and uncertainty analysis.

The European Commission is expected to deliver a CDR certification scheme by 2023, while the UK has proposed the creation of an independent MRV authority by 2024, operating between project developers and the government. The latter is expected to advise that, since CO<sub>2</sub> storage durability is considered key, permanent CDR methods are more valuable than temporary methods.

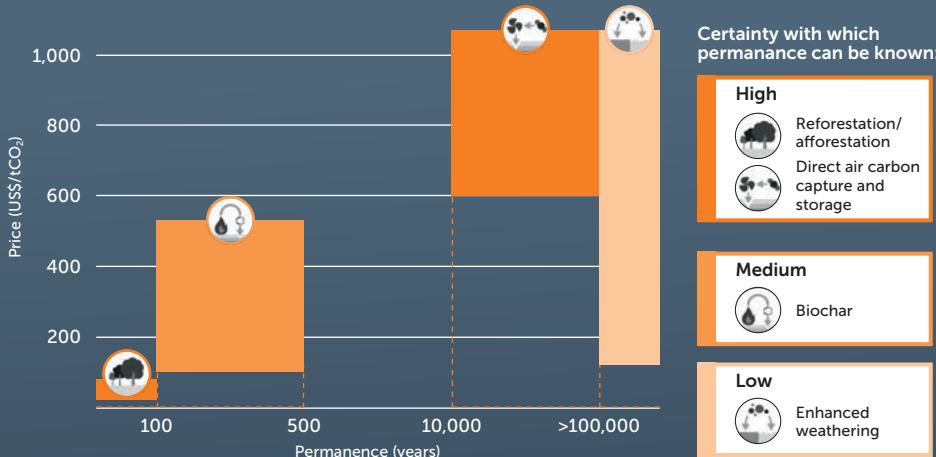
## Achieving net zero

Increased market attention on the integrity of carbon credits, coupled with efforts to scale the CDR sector, suggests it is set for growth. The challenge lies in convincing the wider market that there is value in buying credits from novel CDR methods that currently exceed average market prices. Disparities in the durability of different methods, plus a lack of robust MRV protocols, also complicate buyer decision-making. However, while ‘avoidance’ credits have so far outstripped ‘removal’ credits, this is likely to change as buyers become more sophisticated.

As the market develops and regulatory and governance requirements emerge alongside a growing number of ratings systems, it will be easier to carry out more thorough CDR method comparisons. The importance of permanent storage is likely to become a central feature of the climate policy agenda, highlighting the necessity of valuing CDR credits in line with store permanence. This will allow corporates to adopt a more credible long-term climate strategy that can achieve fair and effective climate mitigation. 

Find out more at [bit.ly/CDRcredits](https://bit.ly/CDRcredits)

**BEATRICE MOCCI** is a research consultant in carbon innovation and Carbon Product Manager at UNDO, a carbon removals company.



“The Taskforce for Scaling the Voluntary Carbon Market is expected to place increased emphasis on the integrity of carbon credits”



Climate change

**I**t can seem as though human-generated global warming is recent. However, climate science has developed over more than a century, with results identified earlier than many may suspect.

### Early experiments

French mathematician Joseph Fourier began investigating Earth's temperature as early as 1807, reporting his findings in the 1824 paper 'General remarks on the temperature of the terrestrial globe and the planetary spaces'. He stated that the atmosphere increases the Earth's temperature by trapping the heat generated by visible light; in other words, the Earth would be cooler if it were not insulated by the atmosphere. By 1836, his compatriot Claude Pouillet had concluded that the atmosphere absorbs radiated heat from the surface more strongly than visible light, explaining this in 'Memoir on the solar heat, on the radiating and absorbing powers of atmospheric air, and on the temperature of space'.

In 1857, Eunice Foote sealed air in one glass cylinder and carbon dioxide ( $\text{CO}_2$ ) in another; when exposed to sunlight, the  $\text{CO}_2$  heated more than air. She commented in 'Circumstances affecting the heat of the sun's rays' that a  $\text{CO}_2$  atmosphere would give the Earth a high temperature.

In 1859, unaware of Foote's work, John Tyndall worked on heat radiation through gases, describing his findings in 'Note on the transmission of radiant heat through gaseous bodies'. By 1861, he'd found that water vapour and  $\text{CO}_2$  were transparent to light but trapped heat, discussing this in his lecture 'On the absorption and radiation of heat by gases and vapours, and on the physical connexion of radiation, absorption, and conduction'.

IMAGES: ALAMY

# OLD NEWS

**Quintin Rayer** traces the history of our knowledge about global warming, which goes back further than many might expect

Both Tyndall and Foote had identified  $\text{CO}_2$  as a greenhouse gas. Tyndall's precise experiments isolated its effect on infrared radiation, and he observed that small changes in  $\text{CO}_2$  concentrations would greatly affect terrestrial heating, corresponding to changes in climate.

### The theory develops

Swedish scientist Svante Arrhenius explored how increased atmospheric  $\text{CO}_2$  concentrations raise surface temperatures for his 1896 paper 'On the influence of carbonic acid in the air on the temperature of the ground', estimating that they would affect global temperatures – and possibly account for long-term climate variations. He even related atmospheric  $\text{CO}_2$  concentrations to global coal production. Essentially, he provided the first comprehensive climate change theory

By the 1930s, scientists had noted rising polar temperatures and the retreat of Arctic Sea ice. In his 1938 paper 'The artificial production of carbon dioxide and

its influence on temperature', building on Arrhenius' work, Guy Stewart Callendar concluded: "By fuel combustion man has added about 150,000 million tons of carbon dioxide to the air during the past half century", and estimates that "approximately three quarters of this has remained in the atmosphere". He estimated that "artificial production" of  $\text{CO}_2$  was warming the climate by  $0.03^\circ\text{C}$  per decade. However, his findings were not widely accepted until further work was completed in 1941.

In his 1956 paper 'The carbon dioxide theory of climatic change', Gilbert Plass calculated the Earth's average surface temperature increase if atmospheric  $\text{CO}_2$  concentrations doubled, and commented that  $\text{CO}_2$  explained the variations seen during geological history. He observed that recent industrial and other human activities were adding more  $\text{CO}_2$  to the atmosphere than natural processes would – large enough to upset the  $\text{CO}_2$  balance. He also estimated that human activities were increasing the average temperature by  $1.1^\circ\text{C}$  per century. Current rates appear faster, at about  $1.6^\circ\text{C}$  per century.

Charles Keeling started collecting data on atmospheric  $\text{CO}_2$  concentration in 1957, publishing 'The concentration and isotopic abundances of carbon dioxide in the atmosphere' in 1960. He showed that concentrations were rising at a rate close to that expected from emissions due to global combustion of fossil fuel.

Humanity has thus known about global warming since the 1960s. One must ask why these timely warnings were not acted upon until we were verging on a crisis?

**DR QUINTIN RAYER** is head of research and ethical investing at P1 Investment Management.

# The new energy order

Russia's invasion of Ukraine has added urgency to the net-zero transition as countries renew their focus on energy security and the geopolitical landscape changes forever. **Chris Seekings** reports

In the eve of World War I, Winston Churchill decided to convert the fuel used by the Royal Navy from domestic coal to imported oil, and ever since, energy security – the uninterrupted supply of affordable energy – has taken on strategic global importance. Around 80% of the world's population live in countries that are net importers of fossil fuels, according to the UN, meaning that six billion people are dependent and vulnerable to geopolitical shocks.

Vladimir Putin's onslaught in Ukraine has brought this into focus, with the war not only resulting in thousands of needless deaths, but also sparking a global cost-of-living crisis as energy prices rise. However, the situation has also added urgency to the renewable energy transition as countries rush to end reliance on Russian fossil fuels and ramp up production of clean domestic power.

The shift could ultimately diminish Russia's influence on the global stage, with neighbouring nations no longer having to bow to ongoing threats around limiting gas supplies. "We must become independent from Russian oil, coal and gas," European Commission president

Ursula von der Leyen said earlier this year. "We simply cannot rely on a supplier who explicitly threatens us."

Imagine a world of interconnected, regional electricity grids in which countries can independently generate renewable energy, and we can see how the net-zero transition may also be a driver of peace. However, with the EU currently relying on Russia for around 40% of its gas, this is not going to happen overnight, and fresh conflicts could arise as old alliances and trade flows are reconfigured in a new world order for energy markets.

## The immediate threat

The UK and US have announced plans to end their use of Russian fossil fuels this year, while the EU aims to do so by 2030. The problem is that the EU assumed it would manage the transition using cheap Russian gas. "Now the challenge is figuring out how Europe accomplishes the energy transition without Russia," says Joseph Majkut, director at the US-based Center for Strategic and International Studies' Energy Security and Climate Change Program. "That means introducing stricter efficiency standards and higher goals, accelerating the



deployment of renewable technologies, and building a massive hydrogen industry in a very short timescale. That is going to be hard to do."

Liquefied natural gas exports to Europe have risen by 75% since March compared to 2021, while US exports have nearly tripled. Majkut expects this to continue, with many US exports shifting from Asia to Europe. "Europe and the US now have to make sure that that capacity build out doesn't violate long-term climate goals or lead to adverse climate outcomes. That's going to be a tricky challenge involving a variety of technical interventions."

Parts of North Africa and the Middle East, particularly Qatar, could also come to the EU's aid if Russia was to 'turn off the gas', and rationing may be an option in an emergency. However, these are not long-term solutions, and there were already holes in the bloc's climate plans before the invasion of Ukraine. In Germany, for example, planning permission for commercial wind power production can take more than five years. "If Europe is going to build in line with its climate targets, that's an unacceptable timeline," Majkut says. "It was unacceptable before February 24, but the energy security imperative has forced these challenges forward in policymakers' minds."

### Rewiring the world

Once the dust settles on the Ukraine-Russia war and energy prices stabilise, it may be possible to look back on this year's events as a net-zero catalyst. When trying to predict which countries will be the big winners from the clean energy transition, the International Renewable Energy Agency suggests considering three factors: potential for renewable energy generation, mineral richness, and technological innovation. In a report, it states: "Control over the production of and trade in oil has been a key feature of 20th-century power politics – a transition from fossil fuels to renewable energy could transform global power relations no less than the historical shifts from wood to coal and from coal to oil."

The energy trade will move from fossil fuels to minerals and products, such as batteries and solar cells, and countries that have enjoyed geopolitical influence due to their oil and gas supply may see this influence decline unless they reinvent their economies for this new era.

**"The challenge is figuring out how Europe accomplishes the energy transition without Russia"**

China has already established itself as a leading exporter of clean energy technology, creating a balance-of-trade advantage. Indonesia also stands to profit, since it has the world's largest reserves of nickel – a key element for batteries – while India's prime minister Narendra Modi has said that green hydrogen could help his country make a "quantum leap" to energy independence by 2047. "We're seeing countries try to position themselves for influence in the world, whether that's through investing in the building blocks of a hydrogen economy or through mining for critical elements, such as with the cobalt industry in the Democratic Republic of Congo," Majkut says. "But we can't just look at places with natural resources, because the energy transition is going to be one that involves high technology systems integration, so every part of the value chain is going to matter."

Broadly speaking, energy dependence is likely to shift from global markets to regional grids, and countries that import oil from the other side of the world today will look to develop renewables and integrate their grids with those of neighbouring countries. Advancements in ultra-high-voltage transmissions could, however, help to enhance trade in electricity over longer distances.

### A new battleground

Unfortunately, a world of interconnected electricity grids still presents opportunities for friction via the new dark arts of statecraft. Some argue that nations which dominate electricity grids may exercise control over their neighbours, and that inter-state electricity cut-offs will become a foreign policy tool, applied strategically in the same way that oil and gas sanctions are used today. The proliferation of technology and interconnected electricity grids could also present a key battleground for cyber warfare. Authorities recognised these threats in 2016 when national security justifications were invoked to prevent China's State Grid from purchasing shares in Australia's electricity distributor AusGrid.



# Energy

"We're seeing countries wanting to own parts of this new energy economy, and that's going to introduce trade disputes"

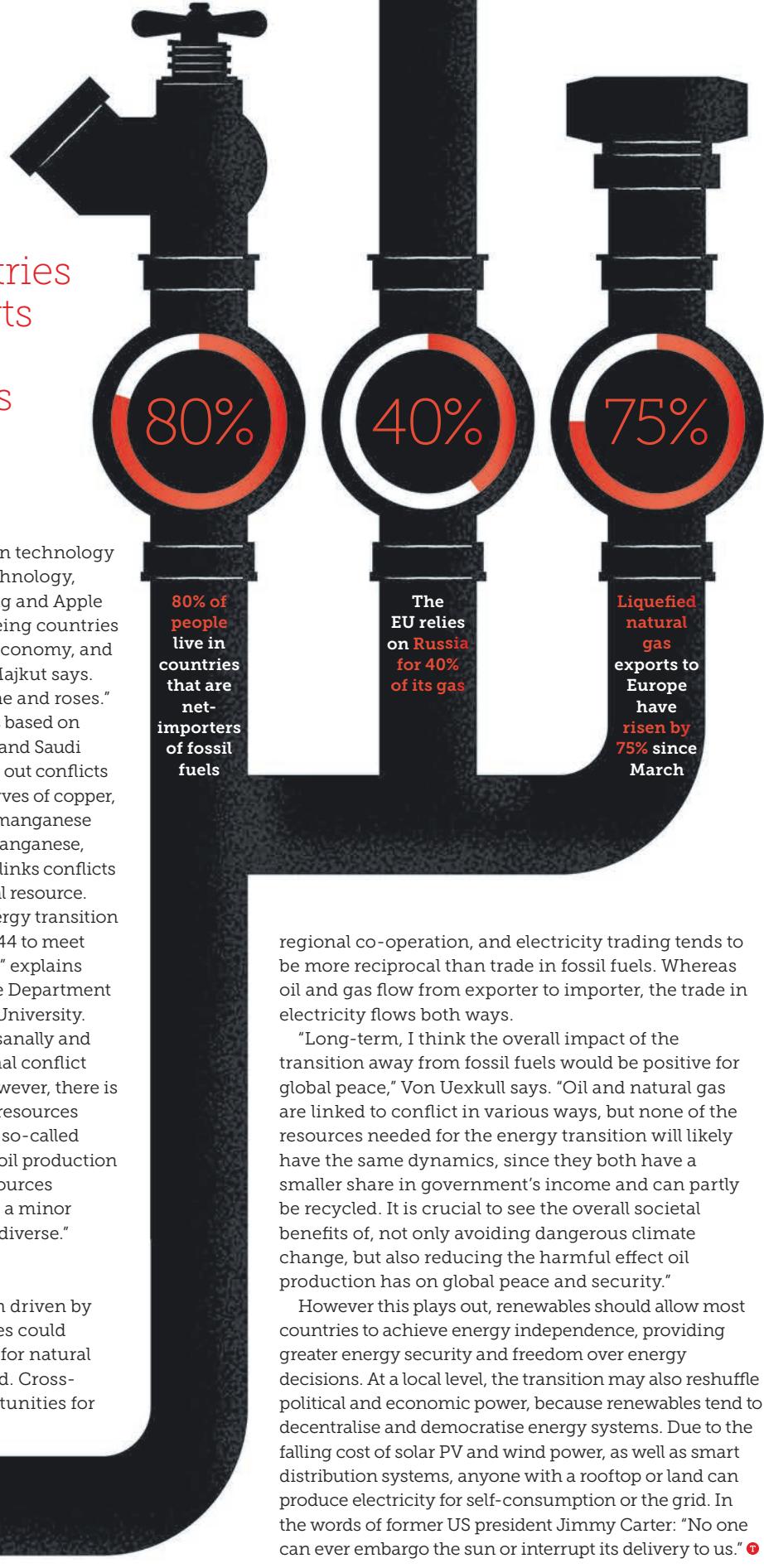
The clean energy race could also result in technology dominance, as we have seen in mobile technology, where a few companies – such as Samsung and Apple – compete for global leadership. "We're seeing countries wanting to own parts of this new energy economy, and that's going to introduce trade disputes," Majkut says. "It's not necessarily going to be all sunshine and roses."

Meanwhile, old alliances between nations based on fossil fuels, such as the one between the US and Saudi Arabia, could fail. It is also impossible to rule out conflicts over minerals. Latin America has huge reserves of copper, iron ore, silver, lithium, aluminium, nickel, manganese and zinc, while Africa is rich in platinum, manganese, bauxite and chromium. However, evidence links conflicts to oil more robustly than to any other natural resource.

"Production of some minerals for the energy transition will need to increase by a factor of three to 44 to meet targets established by the Paris Agreement," explains Nina von Uexküll, associate professor at the Department of Peace and Conflict Research at Uppsala University. "Some of these minerals can be mined artisanally and this may lead to challenges related to internal conflict and governance issues in fragile states. However, there is little to suggest that increasing demand in resources needed for an energy transition will lead to so-called 'resource curse' dynamics associated with oil production that tend to beset major producers. The resources needed for decarbonisation only constitute a minor share of the local economies and are more diverse."

## The peace dividend

When considering the wars that have been driven by oil, it is possible that the pivot to renewables could reduce conflict by alleviating competition for natural resources, thus delivering a peace dividend. Cross-border electricity trading will create opportunities for



regional co-operation, and electricity trading tends to be more reciprocal than trade in fossil fuels. Whereas oil and gas flow from exporter to importer, the trade in electricity flows both ways.

"Long-term, I think the overall impact of the transition away from fossil fuels would be positive for global peace," Von Uexküll says. "Oil and natural gas are linked to conflict in various ways, but none of the resources needed for the energy transition will likely have the same dynamics, since they both have a smaller share in government's income and can partly be recycled. It is crucial to see the overall societal benefits of, not only avoiding dangerous climate change, but also reducing the harmful effect oil production has on global peace and security."

However this plays out, renewables should allow most countries to achieve energy independence, providing greater energy security and freedom over energy decisions. At a local level, the transition may also reshuffle political and economic power, because renewables tend to decentralise and democratise energy systems. Due to the falling cost of solar PV and wind power, as well as smart distribution systems, anyone with a rooftop or land can produce electricity for self-consumption or the grid. In the words of former US president Jimmy Carter: "No one can ever embargo the sun or interrupt its delivery to us." T

# Shifting builds

When a construction project is delayed, are the environmental impact assessment's findings still valid? **Ellen Smith** reports

**A** consultant carrying out a construction programme environmental impact assessment (EIA) under the Town and Country Planning (EIA) Regulations 2017 must consider the intensity and type of construction activity in order to assess construction effects, and the programme's completion year in order to assess operational effects. EIAs often consider construction programmes provided by applicants before contractors have been appointed, so are subject to change. However, consultants should assume that most planning applications have a three-to-five-year implementation period, and this should be considered as a minimum in the construction programme.

If there are unknowns in the construction programme, assumptions should be made clear in the environmental statement (ES). Assumptions in the construction programme should aim to provide a reasonable worst case – for example, assuming the nearest potential location of construction plant in proximity to surrounding receptors, and the overlapping of construction activities. While programming for the works may be subject to modification, there has usually been sufficient planning to enable the likely significant environmental effects to be identified and assessed.

When an applicant needs to seek planning permission to change a scheme's design or phasing, a change in construction programme can be addressed through further environmental information, such as an ES addendum. This could require the assessment of a further interim scenario, should there be a significant delay in delivering part of the proposed development, resulting in part-occupation.

Otherwise, in terms of construction traffic it could be considered that the original dates in the ES present a worst-case assessment for air quality, noise and traffic, as the UK vehicle fleet is projected to improve. Other environmental topics, such as wind, daylight and sunlight, flood risk and ecology are unlikely to be affected by a change in construction programme – unless there is a significant change in phasing, in which case temporary mitigation measures may be required (such as temporary screening if there are wind safety concerns).

## Cumulative concerns

One issue with a change in construction programme is the assessment of cumulative effects. A proposed development will not cumulatively interact with other identified cumulative developments during construction if a proposed development or cumulative scheme is delayed.

To provide a worst-case assessment, and where information on the



construction programmes of other developments is unavailable, reasonable assumptions should be set out in the ES, such as the extent to which the cumulative schemes would have overlapping construction programmes.

Any new schemes gaining consent following permission for the proposed development – and not previously identified in the EIA as coming forward – should be assumed to have assessed the proposed development in their own cumulative assessments.

So a change in construction programme can be tricky for EIA, particularly when it comes to the cumulative assessment. The consultant should take care to set out the reasonable assumptions made in the assessments, such as the assumption that the cumulative schemes would have their own construction environmental management plans or construction logistics plans in place. Limitations, such as a lack of available information on a construction programme, should also be reported in the ES.

EIAs cannot consider every outcome, but including clear assumptions and limitations allows the appropriate identification of likely significant effects. Whether an EIA is valid when the original construction date has changed should be decided on a case-by-case basis. **T**

**ELLEN SMITH, PIEMA** is principal EIA consultant at Waterman Infrastructure & Environmental.



# Circular credentials

**Aoife O'Donnell** and **Ellie Walshe** explain how digital product passports could help to enable a circular economy in the construction industry

To reach net zero by 2050, society needs to move away from its current linear 'take-make-waste' economic model and towards a more circular economy. The construction industry – including material extraction, manufacturing of construction products, and the construction and renovation of buildings – is currently responsible for approximately 5%–12% of the EU's total greenhouse gas (GHG) emissions.

The Ellen MacArthur Foundation, one of the most established thought leaders on the circular economy, believes that through implementing circular economy principles, emissions from construction materials can be reduced by 38% by 2050.

Government policy will be key in enabling the transition to a circular economy for all sectors, especially construction. The implementation of the EU's Circular Economy Action Plan and

the Circular Economy Package in the UK are the first steps in decoupling growth from resource consumption.

While circular economy principles and theories are well-established, there are challenges to implementation, including a lack of transparency, standardisation and data sharing. EU policy targeting digitalisation – and, in particular, the use of digital product passports – will be key in overcoming these limitations.

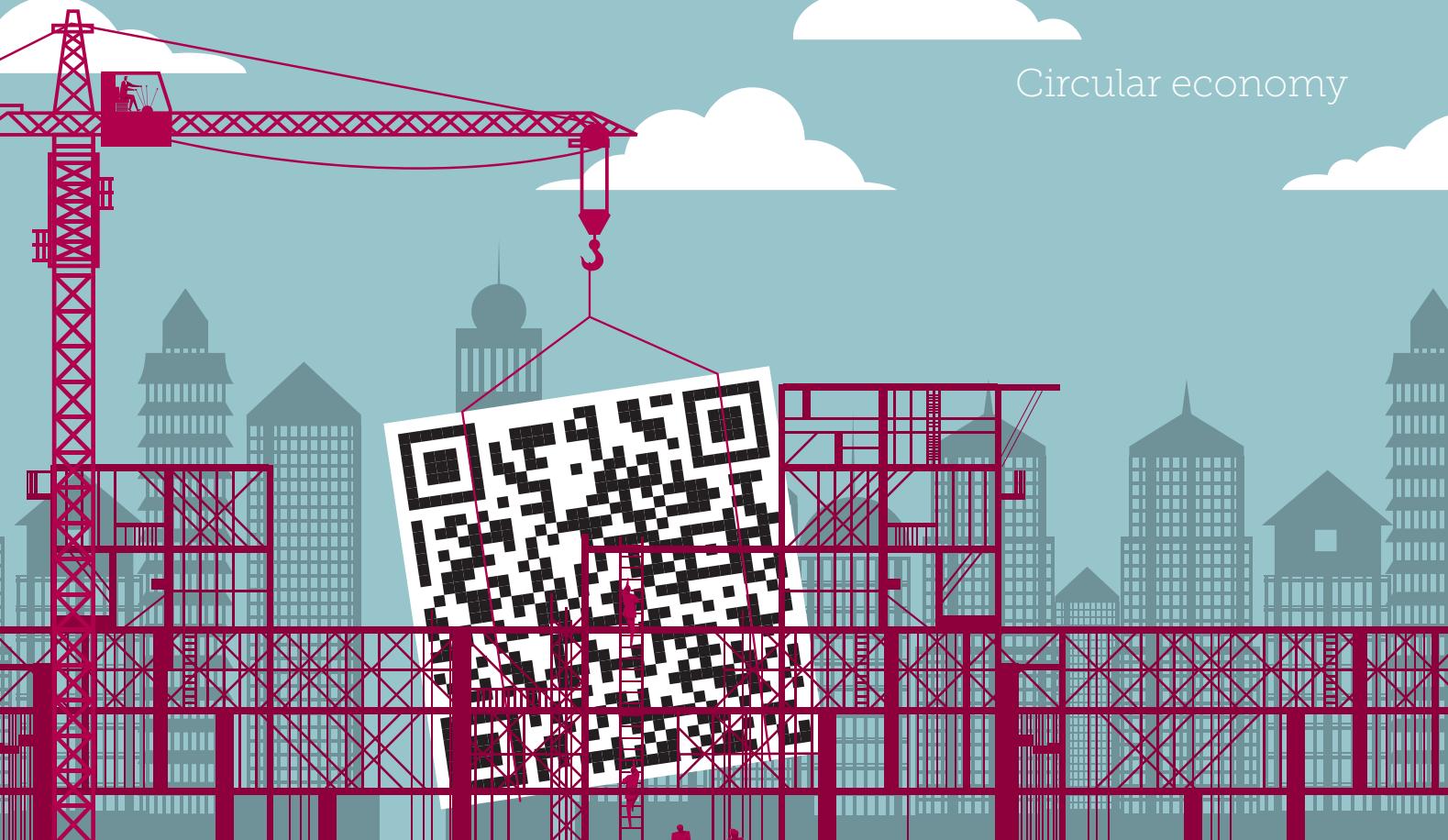
Digital product passports, or material passports, serve as an inventory of all materials, components and raw materials used in a product or building, along with information on their location. They give materials a documented identity and value to enable them to remain visible in the economy.

The implementation of digital product passports is driven by regulation, with a number of European countries adopting the concept in 2022. It has been outlined as an action in the EU's revised Construction Products Regulation, which is open for stakeholder feedback until 1 July 2022.

An early leader on the concept of digital product passports in Europe was the Buildings as Material Banks (BAMB) project, consisting of 15 partners from seven different European countries. BAMB has published a number of research papers and best practice guidelines for implementing digital product passports.

5-12%

The construction industry is responsible for approximately 5%–12% of the EU's total greenhouse gas (GHG) emissions.



## CMEx pilot

In Ireland, the concept is being put to the test with the launch of the Irish Green Building Council's (IGBC) Construction Materials Exchange (CMEx) pilot project, funded by the Irish Department of the Environment, Climate and Communications. The project aims to use digital product passports and an online platform as a mechanism to boost the reuse of materials from the construction industry waste stream. The IGBC is partnering with the Netherland's Excess Materials Exchange, which operates an online materials platform and has run a number of similar pilots in different countries.

The pilot project was only recently launched, but the IGBC has already identified several potential barriers to overcome before an online exchange platform to facilitate reuse in the Irish construction sector can be properly implemented. The IGBC has identified that general awareness of the circular economy within the construction sector is low, and while companies and contractors are excited to get involved in pilot programmes such as the CMEx,



**"Digital product passports give materials a documented identity and value to enable them to remain visible in the economy"**

they are less committal once they understand the resource requirement.

Another barrier identified by the IGBC is the Irish government's conservative approach to the implementation of the EU Waste Framework Directive, which has led to a perception of high litigation risk if materials are reused. The digital product passport experience in other member states, such as the Netherlands,

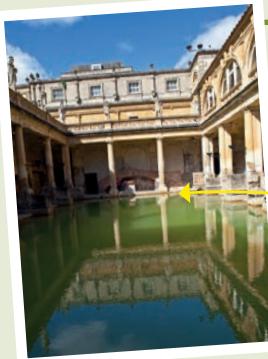
shows that this does not need to be the case, and that implementing these platforms could bring huge cost and environmental benefits.

With the publication of the EPA's new best practice guidelines for the preparation of resource and waste management plans for construction and demolition projects, things are clearly moving in the right direction. The guidelines promote more circular design and construction principles, including calls for developing digital logbooks for buildings.

The digital product passport has an important future role to play in providing an extensive, continuously updated information repository for the construction industry, which will facilitate more materials to be reused and stop materials from entering waste streams. **T**

**AOIFE O'DONNELL** is a senior sustainability manager at Davy Horizons.

**ELLIE WALSH, MIEMA** is a senior sustainability manager at Davy Horizons.



**Why did you become an environment/sustainability professional?**  
After doing an industrial placement in an environmental consultancy as part

of my degree at the University of Bath, I wanted to find out more, so took more papers on the topic, sparking an interest in indigenous environmental perspectives. I then did a masters in environmental science at the University of Auckland.

**What was your first job in this field?**  
Environmental scientist at a consultancy during my industrial placement.

**How did you get your first role?**  
At the University of Bath we had a placements co-ordinator who could match interests with roles.

**What does your current role involve?**  
My main role is at Kāinga Ora, the New Zealand public housing and urban development agency, where I oversee development and implementation of the sustainability programme. This involves integrating sustainability considerations in investment and planning decision-making processes, developing strategic directions, and piloting interventions.

**How has your role changed/progressed over the past few years?**  
Sustainability is increasingly seen as a core issue, and funding is being funnelled into it. It's been great seeing senior-level support for the work, and appreciation of the complexity of the issues.

**What's the best part of your work?**  
Seeing it 'click' with people – I find hesitance to act is driven more by uncertainty than by disagreement. I spend time trying to understand different perspectives and work out how to reframe the problems so they resonate.



*"Hesitance to act is driven more by uncertainty than by disagreement"*



## CAREER PROFILE

# Alec Tang

FIEMA CEnv

Director of sustainability at Kāinga Ora and lecturer in sustainable business at the Auckland University of Technology

### What's the hardest part of your job?

Knowing that the pace of change is nowhere near where it needs to be, ensuring this doesn't lead to inertia, and taking the time to reflect on the change that we've seen.

### What was the last development event you attended?

I lecture on sustainable business at Auckland University of Technology – as much a development opportunity for me as it is an education for my students.

### What did you bring back to your job?

Lots of different perspectives.

### What is/are the most important skill(s) for your job?

Listening skills, influence and communication. Also an ability to look at the whole-system impacts and communicate these interlinkages in a way that makes sense to a diverse audience.



If you would like to contribute a member profile contact:  
[media@iema-transform.com](mailto:media@iema-transform.com)

### Where do you see the profession going?

I hope people in our profession will be valued not just for our knowledge, but also for how we think and approach problems at a holistic and systems level.

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

Ideally, we'll have broad recognition that the systems we've created are flawed, and work will be underway to transform them. In reality, I think there will be more people in senior parts of these systems and structures who champion this change.

### What advice would you give to someone entering the profession?

Don't ever assume your ideas don't count or won't work, and ask prospective employers how committed they are to sustainability.

### How do you use the IEMA Skills Map?

I love how it emphasises the core soft skills, and use it to articulate what it means to be a sustainability professional.



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

Inquisitive, supportive and fun!

### What motivates you?

Finding out why a problem exists, helping others see the 'bigger picture', and getting traction around an idea.

### What would be your personal motto?

Don't let the pursuit of perfection prevent action.

### Greatest risk you have ever taken?

Moving to New Zealand without knowing anyone here.

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

There are enough people alive that I'd like to meet without having to go back! 



# DATES FOR YOUR DIARY

[iema.net/events](http://iema.net/events)

**THURSDAY 4 AUGUST**

**WEBINAR (MEMBERS ONLY)**

## How To: Become a Practitioner Series Learning Outcome 10 – Relationship development

In this webinar, delivered by Gillian Gibson, we look at some of the different elements of communication that we can deploy, when to use them and how to ensure they are effective. We will refer to frameworks including the IEMA Skills Map as part of this.

[bit.ly/BecomePrac\\_LO10](https://bit.ly/BecomePrac_LO10)

**FRIDAY 5 AUGUST**

**WEBINAR**

## Republic of Ireland: Environmental noise – health, mapping and sustainability

In this webinar, we give an overview of the impacts of environmental noise on human health and how the Environmental Noise Directive aims to avoid, prevent and reduce those negative and harmful effects. We also discuss the link between noise (and sound) and the three pillars of sustainability.

[bit.ly/EnviroNoise](https://bit.ly/EnviroNoise)

**WEDNESDAY 17 AUGUST**

**WEBINAR (MEMBERS ONLY)**

## How To: Become a Practitioner Series Learning Outcome 11 – Resilience, risk and continual improvement

In this webinar, Dipvandana Mehta will cover: what this learning outcome is looking for; examples of experience that can be used; how this can be integrated to provide evidence of other PIEMA learning outcomes; and a question and answer session.

[bit.ly/BecomePrac\\_LO11](https://bit.ly/BecomePrac_LO11)

**WEDNESDAY 24 AUGUST**

**IN-PERSON SITE VISIT**

## Scotland West: Glasgow Claypits Project site visit

Duncan McLean, project lead at LUC, will give a guided tour of the site and provide insight into how the site has been transformed from vacant and derelict land to a vibrant community green space, and the challenges that were overcome. We will also discuss the benefits of providing access to multifunctional and meaningful green space.

[bit.ly/GlasgowClaypits](https://bit.ly/GlasgowClaypits)

**MONDAY 22 SEPTEMBER**

**EXPO**

## Big Sustainability Expo (Southampton)

Build confidence in your business, as we build an event that will help you reduce your impact on the environment and provide the building blocks to help you do so. What's on offer? Over 100 different exhibition stands. New products, services, technologies and innovations making their mark today. Leading experts from across the country, and education workshops

[bit.ly/BigSusExpo](https://bit.ly/BigSusExpo)

**WEDNESDAY 28 – THURSDAY**

**29 SEPTEMBER 2022**

**EVENT**

## Net Zero Festival

This event brings together some of the world's foremost thinkers on what it will take to accelerate and expand the net-zero transition. Business executives, investors, entrepreneurs, policymakers and campaigners can explore how to navigate the defining economic, political and technological trend of the age. Ben Goodwin, IEMA's head of policy, will lead a workshop on Green skills: Making your workforce Net Zero ready.

[bit.ly/NZFestival2022](https://bit.ly/NZFestival2022)

If undelivered please return to:

IEMA  
The Old School House  
Dartford Road  
March  
PE15 8AE



# Global environment and sustainability conference

**Wednesday 19th – Wednesday 26th October**

This year we are delighted to be hosting our annual conference where we will shine a spotlight on our members around the world and the inspiring work being done to action change for a more sustainable future. Don't miss your chance to hear from inspiring speakers, join discussions and gain practical insights.

**Secure your free place at our exclusive members only conference:**



[iema.net/events/iema-connect](http://iema.net/events/iema-connect)