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Oct/Nov 2023
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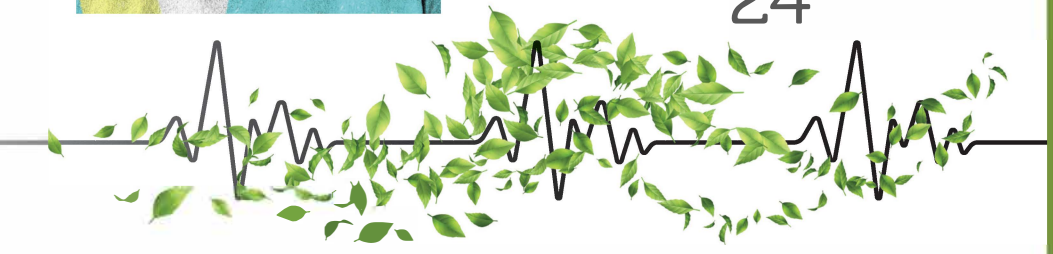

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CLARIFICATION

Aug/Sept issue
The contribution published on p14 was not marked as an advertorial. We apologise for this oversight.

Sustainable healthcare

SARAH MUKHERJEE MBE, CEO, IEMA

ORIANA FENWICK/SYNERGY ART

Hello, and welcome to another edition of *Transform* magazine.

The extreme weather events we've witnessed around the world this year are another heartbreaking reminder of the increasingly detrimental impacts of climate change on human health. However, our healthcare systems are also having a negative effect on the climate. In this issue, IEMA members highlight the crucial work they are doing to deliver healthcare that is sustainable for both people and the planet.

In the northern hemisphere, the nights are drawing in, and people's thoughts are turning to the festive season and gift-giving. Beauty products are a popular choice, but have you ever thought about how sustainable they are? Lorraine Dallmeier reveals some insider truths.

In the UK, there is considerable concern about public buildings constructed with RAAC – reinforced autoclaved aerated concrete – and its fragility years after construction. Although lighter than traditional concrete, the material is also more porous, which has led to hundreds of schools and other buildings having to close. One of RAAC's advantages is its lower carbon footprint. Rick Gould considers whether it's possible to decarbonise a major component of concrete – cement.

Meanwhile, as Huw Morris reports, there is increasing concern about the flammability of electric vehicle (EV) batteries, and the danger this poses to international shipping. Can we find safer ways to get EVs to their destination?

I hope you enjoy this edition of the magazine. As always, we welcome your thoughts, contributions and feedback on what is – and isn't – working for you. It's incredibly helpful to hear your comments. That's it from me. Enjoy this issue, and hopefully speak soon.

"Our healthcare systems are having a negative effect on the climate. In this issue, IEMA members highlight the crucial work they are doing to deliver healthcare that is sustainable for both people and the planet"

IEMA Transforming the world to sustainability

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.

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ROUNDUP

IEMA NEWS AND COMMENT

TRAINING

IEMA to deliver global training for 'diverse-owned businesses'

Diverse-owned businesses (DOBs) within the global supply chains of Diageo, Danone and Google will receive sustainability training from IEMA, which has been selected ahead of other educational organisations.

It is a major triumph for IEMA, enhancing its global reach and international reputation, and enabling it to build skills in DOBs worldwide.

DOBs are defined as businesses that are at least 51% diverse-owned, managed and controlled. They are envisaged to include women-owned, LGBTQIA+-owned, disability-owned, or minority-owned companies.

IEMA will provide training on the key skills needed to implement sustainable business practices, understand future buyer needs, adapt business models and become more competitive.

An initial trial will run between September and December with 150 individuals from women-owned businesses, and there is a significant opportunity for wider roll-out of the programme, which is coordinated by US-based WEConnect International.

The training starts with a panel-based webinar, hosted by IEMA CEO Sarah Mukherjee MBE, before all the delegates are enrolled on the Institute's Environmental Sustainability Skills for Managers eLearning course, delivered via training provider Rio.

The final part of the programme is a four-hour interactive 'leading with sustainability' workshop.

See www.bit.ly/DOBtraining for details

CONSULTATION

IEMA responds to OEP consultation on government's species abundance targets

BY LESLEY WILSON

In May, the Office for Environmental Protection (OEP) called for evidence on nature recovery, specifically considering species abundance.

The OEP was set up in 2021 to 'protect and improve the environment' by holding the government and other bodies – such as government departments, ministers, regulators, local authorities, and some private bodies such as water companies – to account.

The call for evidence is related to species abundance targets within the government's Environmental Improvement Plan (EIP). Its aim was to help the OEP understand whether the government's plans and delivery methods will achieve the species abundance targets, and any major barriers, enablers, synergies and trade-offs. The consultation included type, scale and pace of interventions, across terrestrial, freshwater and marine environments.

IEMA held a workshop with members and other expert stakeholders to create a robust response to the consultation and recommended the government should:

- Make clear what species are being measured in its targets in the EIP and how they will be measured and monitored to support key stakeholders in taking action.
- Undertake research to better understand how habitat creation will improve species abundance, and create a sufficient evidence base for nature recovery.
- Make the targets in the EIP on marine more focused and put in place processes for monitoring and measuring.
- Mandate Biodiversity Action Plans and provide resources for them to be implemented.
- Communicate timetables for the launch of regulations and provide timely guidance on regulation and policy, including case studies.
- Ensure that nature and its associated ecosystem services are embedded in meeting the demand for housing and climate actions, particularly through the use of nature-based solutions.
- Provide appropriate funding and resources to support the ambition in the EIP to halt the decline in species abundance by 2030. This includes resources for local authorities to implement local change, for record centres, to upskill stakeholders, and resources to allow the Environment Agency to act on nature degradation caused by landowners.
- Ensure that risk identified through natural capital assessment and uncertainty is transparently recognised and managed.

Other insights that emerged from the workshop included a perceived lack of data for baselining, the need to improve the management of protected sites (see also our response to the OEP consultation on protected sites in 2023) and the need to consider the Lawson principle of being more joined up, ensuring 'stepping stone' habitats and connections with local wildlife sites.

For further details of the government consultation and the response, visit www.bit.ly/OEPconsultation

RECOMMENDATIONS

IEMA outlines key asks ahead of party conferences

BY BEN GOODWIN

IEMA's Policy and Practice member groups have identified several areas in which action is required to address the many challenges that we face in relation to the ongoing climate change and biodiversity crises.

The result is a document that puts forward policy recommendations on climate change and energy; biodiversity and natural capital; impact assessment; circular economy; and green jobs and skills.

Recommendations in the document include the need for policymakers, with support from business, to:

- Establish a permanent cross-government body that takes a strategic approach to delivering green skills and jobs growth in the UK that is tied to our long-term climate and environmental goals.
- On Nature Positive, take a lead globally and mandate business to monitor, assess and disclose risks, dependencies and impacts on biodiversity and create a net-zero-style momentum.
- Develop a clear investment and deployment roadmap for onshore wind as recommended by the Skidmore Review, and establish a speedier regime for good projects to connect to the grid.
- Develop a circular renewable strategy to ensure materials and minerals needed for transition to a net-zero economy are reused, remanufactured and recycled.
- Create a National Environmental Assessment Unit to enhance environmental impact assessment delivery in England.

Members of the Policy and Practice team will attend the Labour and Conservative party conferences to try to gain support for these asks from party members, businesses and third-sector organisations there.

See www.bit.ly/policy_asks

PUBLICATION

New guide sets out circular economy goals and principles

BY ADAM BATCHELOR

The circular economy is a systemic approach that aims to eliminate waste and keep products and materials in use for longer. It goes far beyond recycling and involves prioritising design choices for reuse, repair, refurbishment, remanufacture and repurposing. Keeping materials and products in their higher value form helps reduce our demand on resources, decrease greenhouse gas emissions and keep human activity within the safe limits of planetary boundaries.

However, embedding the circular economy can seem technical and complicated, and there are common misunderstandings. Communicating the circular economy clearly is essential to shift mindsets and enable professionals to set out problems and solutions effectively.

The Circular Economy Network Steering Group held a workshop at the end of May with the aim of finding the most effective way to communicate the subject. This interactive session tested and gained feedback on content that should be used in a new *Circular Economy 101 (CE101)* guide.

Building on common principles, key levers and interventions needed to transition to a circular economy, the steering group has developed 'six goals for decision-makers', a key feature of this guide. These goals incorporate additional principles that are aimed at the need for clean and sustainable materials, shared value and reducing the flow of materials in the system.

The steering group identified the need to provide a useful tool to put principles and circular strategies into practice. *CE101* includes example questions you can ask yourself to help you embed the circular economy, with a focus on product design.

The *CE101* guide uses clear, accessible and easy-to-understand language, diagrams and tools to demystify the circular economy and explain it to non-experts.

The guide includes the following sections:

- Introduction
- What is the circular economy?
  - Implementing a circular economy
  - Six goals for decision-makers
  - Priorities for design
  - Questions to help you embed circular economy principles
- Key terms
- Additional resources.

The toolkit is available to members as an interactive document or as a page-by-page PDF at www.bit.ly/CE101

PUBLICATION

Steering group tackles habitats regulations assessment in the 17th edition of the *Impact Assessment Outlook Journal*

BY RUFUS HOWARD

Members of IEMA's Impact Assessment Network Steering Group have published the 17th edition of the *Impact Assessment Outlook Journal*, which provides a series of thought pieces on the policy and practice of habitats regulations assessment (HRA).

Across the UK and Europe, competent authorities (public bodies, regulators, government departments or agencies) must carry out an assessment, known as an HRA, under the habitats regulations to test if a plan or project proposal could significantly harm the features of a site designated for the protection of habitats or species of European or international importance.

In this latest publication from IEMA, the guest editor, Ursula Stevenson, has selected seven articles by impact assessment (IA) professionals and invited experts. This publication benefits from contributions from the Office for Environmental Protection, multiple expert practitioners from IEMA EIA Quality Mark consultancies and a leading IA academic, as well as a comparative international perspective from Malta.

The result is a valuable read on different aspects of UK and international practice, exploring HRA, its strengths, issues and potential future.

The journal is available at www.bit.ly/IEMAJournal

PUBLICATION

Unlocking sustainable futures: helping SMEs embrace transition planning

BY CHLOE FIDDY

As the global economy travels (rather too slowly) towards a greener horizon, growing numbers of companies find themselves navigating the difficult terrain of climate reporting. Driven by mounting pressure from key stakeholders, firms are increasingly compelled to disclose their environmental performance.

Climate reporting is complex, comprising both mandatory and voluntary aspects, contingent on the organisation's jurisdiction and scale. Historically, the focus of such reporting has primarily rested on quantifying and divulging a company's greenhouse gas (GHG) emissions. However, demands for better strategic information have ushered in new requirements that encompass not just emissions but also the provision of a strategic transition plan that underpins the carbon accounting report.

Put simply, a transition plan is a corporate roadmap towards a more harmonious relationship with the environment. It lays out the route an organisation will follow to contribute to the future low-carbon economy, where emissions and negative ecological impacts are minimised.

Furthermore, these plans detail how companies intend to flourish in a future shaped by the forces of climate change. This broader framework of corporate responsibility and commitment is firmly in the territory of 'environmental and social governance', a cornerstone of modern organisational management.

Scaling down

Historically the domain of larger corporations, transition planning involves scrutinising the supply chain, which for large organisations usually includes a number of small and medium-sized enterprises (SMEs). SMEs, owing to their interdependence with larger entities, are being inexorably drawn into the orbit of transition planning and producing roadmaps of their own.

The crux of the challenge for SMEs lies in the scarcity of tailored guidance commensurate with their scale. Many are enthusiastic to embark on this journey but are left floundering, unsure of the initial steps. Meanwhile, those that have ventured into transition planning seek approval of their efforts. IEMA's new *Transition Planning for SMEs* guidance is designed to support hesitant SMEs and offer fresh insights to those already navigating this transformative terrain.

In shaping this guidance, the project team consulted with SMEs to identify their core challenges. The result is a practical set of recommendations, culled from real-world case studies of organisations of varying sizes but written for a target audience of SMEs.

Reporting requirements

A frequently reported difficulty was understanding the different reporting requirements, and the guidance proposes a foundational approach specific to SMEs that can later expand in tandem with the organisation's growth or evolving reporting standards.

Overcoming resistance from senior management and securing resources for the transition is a common stumbling block for SMEs. Within the guidance, valuable insights gleaned from case studies suggest how SMEs can articulate a compelling business case for transition planning. The agility of smaller organisations often emerges as a hidden asset once the decision to act is made.

Target-setting rationales

Setting pertinent targets is another puzzle for SMEs. IEMA's guidance gives SME-specific rationales for target setting, surveys diverse initiatives for setting benchmarks and offers advice on tailoring the approach to each organisation.

Understanding scope 3 emissions embedded within supply chains is a herculean task for SMEs. The guidance steers SMEs through boundary definitions and suggests further reading for establishing a robust greenhouse gas (GHG) inventory. Case studies illustrating how organisations tackle GHG emissions within their supply chains provide SMEs with scalable and transferable blueprints for action and planning.

Lastly, the guidance reviews different reporting formats and the questions of verification and validation.

The guidance is available for members at www.bit.ly/SMETransitionPlanning

SHUTTERSTOCK

OUR IMPACT

IEMA's regional volunteers talk about making a difference worldwide as they build partnerships and share knowledge in a bid to create a sustainable economy

Think global, act local – that's the philosophy of IEMA's regional volunteers, who are crucial in connecting members so that they can share their experience and knowledge on sustainability.

The number of volunteers has doubled to 251 over the past three years, with regional steering groups now in Central Europe, India, Trinidad and Tobago, West Africa, New Zealand, the Middle East and North Africa, and the Republic of Ireland, along with 17 groups in the UK.

Volunteers are the lifeblood of IEMA's local presence, helping to devise solutions to the most pressing environmental and sustainability-related challenges in their areas.

Volunteer voices

Rosemary Horry FIEMA CEnv, chair of IEMA's Midlands network group, says: "We are all part of the solution, and being a volunteer for IEMA means that I not only get to promote sustainability through my work, but I also get to help others to make more of an impact within their roles, by sharing knowledge and hopefully inspiring the future sustainability leaders."

IEMA members in Switzerland, Austria, Germany, Poland and the Netherlands can also now share their expertise through a new Central Europe steering group. Co-chair Damien Plant FIEMA CEnv says: "While it's very early in the life of the Central Europe network, I have already learned how much talent and goodwill there is out there to move things forward.

"We have a great team stepping up to try to bring more coherence to our countries' membership, to grow the membership for individual and collective benefit through networking and to provide support to each other in the great fight."

Local events

Working in teams, IEMA volunteers are also responsible for devising, creating and hosting events that are relevant to their local areas, including careers events, seminars and networking sessions. More than 50 of these events have already taken place this year, with over 2,500 bookings made by IEMA members.

"I am a firm believer in creating the right environment for constructive debate and IEMA's regional steering groups present the opportunity to do this by creating events that develop our shared understanding of the issues we are facing and provide the opportunity to discuss how we can respond to them," explains Morag Robertson PIEMA, chair of IEMA's Yorkshire and Humberside steering group. "I've met some fascinating people as part of my volunteering, learned about areas that I wouldn't normally come across in my working life, and feel like I am playing a part in creating a stronger profession as a result."

New perspectives

Being an IEMA volunteer can help members in their career by equipping them with new skills, experiences and CPD opportunities. However, one of the greatest benefits is networking with people and organisations outside your regular area, gaining new perspectives on the solutions needed to tackle the climate and environmental crises.

Edward Walker MIEMA CEnv, chair of the North East steering group, says: "It is enjoyable volunteering with people from totally different backgrounds – learning how they overcome challenges specific to their own operating area is fascinating, and there are frequently takeaways which I can use in my day job."

Victoria Chater-Lea PIEMA, chair of IEMA's London and South East regional network, adds: "I really enjoy being chair as I get to meet many different environmental and sustainability professionals, each doing exciting work.

"Our aim is to give IEMA members worthwhile events that they can gain something from, whether that is learning about a particular subject, seeing how sustainability has been implemented elsewhere, or networking. I have an open-door policy, and am always looking for ideas and event hosts. If you have an idea, please get in touch!"

If you would like to become a volunteer or learn more about IEMA's regional network groups, visit www.iema.net/knowledge/regional-networks

Pressure on water supplies is growing as the climate emergency accelerates and the push for economic growth intensifies. So who, asks **Tom Pashby**, should control such a precious resource?

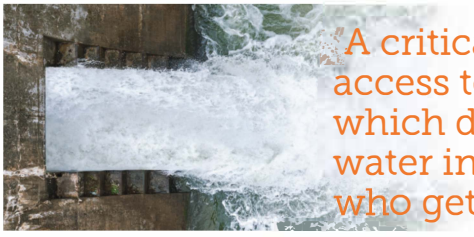
Water is an increasingly stressed resource. Despite covering more than 70% of the planet, only a tiny fraction is available as fresh, clean drinking water.

Unlike energy, water is critical to life everywhere. Energy in the form of electricity has only been in relative abundance for a proportion of the world within the past century, while water has always been required by everyone every single day.

These might be obvious points to make, but they are important when considering the impact of stress on water, given that discussion around resource stress often focuses on access to fossil fuels.

Pressure on water supplies comes from a variety of areas. Most of the global economy is managed in a way that promotes economic growth above all else, rather than prioritising human prosperity or circular economics. Powering economic growth by making more 'stuff', including in the services industry, means using more water.

On top of that, the climate emergency is making access to water even harder. Desertification, extreme weather and less predictable weather patterns make it difficult to provide enough clean drinking and bathing water, adding yet more pressure on the system.



"A critical issue when analysing access to water is ownership, which dictates investment in water infrastructure and decides who gets to consume it"

Lack of access to water can act as a driver for deadly conflict, expanding another threat area in the climate wars already created by dwindling access to fossil fuels, population displacement and urbanisation.

A critical issue when analysing access to water is ownership, which dictates investment in water infrastructure and decides who gets to consume it.

The UK is notorious for having privatised its water supply, and water companies have made themselves unpopular by the lack of investment in infrastructure, with high volumes of leakages and waste being discharged illegally, polluting waterways and seas.

Ownership of water is a global issue. One high-profile example is that of Michael Burry, who achieved fame via *The Big Short*, a film that highlighted the true story of how a small number of investors in New York City noticed the early signs of the global financial crisis that hit in 2007-2008.

Burry convinced bankers to allow him to invest in betting that markets were going to collapse, and he subsequently made vast amounts of money from that prediction.

At the end of the film, the audience realises that Burry had invested in water, indicating that it had already become the next big scarce resource and that his investment would be likely to result in significant profits.

There's a vibrant area of discourse around the relative objective benefits and costs to water users (i.e. everyone) of private, public–private partnerships and exclusively state-owned water.

What is less well discussed in the mainstream is the ethics of different models of ownership, given how critical clean drinking water is in all our lives, and our very different experiences of access from urban to rural communities in the UK, to Western versus the Global South.

There are those who will always argue that the profit motive is an effective and efficient force for good in driving costs down and improving products and services for suppliers. But within some areas of society, it is taken as a given that institutions such as the NHS, the military and the emergency services should largely be protected from the profit agenda.

As economic growth and the climate emergency ratchet up the stress on available clean drinking water, it would be wise to consider who we want to be in control of this vital resource.

TOM PASHBY AIEMA is a digital journalist at IEMA

PAVING THE WAY TO A GREENER TOMORROW

From Europe to India, a range of projects demonstrate how city living can nurture the environment

As well as turning waste into energy, CopenHill is an activity centre and 'green bomb'

As urbanisation continues its relentless march across the globe, city leaders face mounting pressure to develop sustainable and liveable cities. But what exactly does 'sustainability' mean in an urban context?

At its core, urban sustainability refers to cities that meet the needs of current residents without compromising the ability of future generations to meet their own needs. By integrating sustainability into urban planning and management, cities can promote resource efficiency, environmental protection and enhanced quality of life.

Sustainable construction practices are instrumental in creating environmentally friendly and resource-efficient urban environments. These include using eco-friendly building materials, such as bamboo and recycled metals.

Showing how it's done

In Mumbai, the Collage House explores various aspects of reusing and upcycling. It has recycled doors and windows from demolished urban dwellings, giving a nostalgic ambience that is accentuated by columns that are more than a century old, salvaged from a historic house. One of the courtyard walls also showcases cladding made out of discarded stone fragments from stone-cutting yards.

Incorporating energy-efficient architectural design and implementing renewable energy systems are two other ways to reduce a city's environmental footprint. As part of the GrowSmarter initiative (see grow-smarter.eu), Barcelona is showcasing energy-efficiency solutions that could be used by other European cities to reduce the environmental impact of their district energy systems.

Retrofitting existing buildings is key to reducing emissions from the construction sector by 90% by 2050. GrowSmarter prototype retrofits across more than 120,000m² in three cities evaluated both passive and active technologies for improving energy performance. Undertaking building energy retrofits provides multiple benefits, including energy and emissions savings, increased property value and job creation. The project highlights that national strategies must prioritise retrofitting existing structures to create low-energy districts and sustainable cities.

> "It is designed to function as a 'green bomb', rejuvenating the industrial zone"

Bringing biodiversity

Preserving and enhancing urban biodiversity is also key. In Copenhagen, CopenHill is a waste-to-energy plant, topped with a ski slope, hiking trail and climbing wall. Grass flourishes along the slope's edges, alongside sizeable shrubs and trees. It is designed to function as a 'green bomb', rejuvenating the neighbouring industrial zone as seeds disperse from vegetation, and birds, bees and butterflies take up residence there.

Landscape architect SLA has planted 7,000 shrubs and 300 trees on the sloping rooftop and, since the completion of the complex in 2019, the company's biologists have monitored its biodiversity. In 2020, they discovered an additional 56 plant and tree species, on top of the number of species originally identified, bringing the total count to 119.

Sustainable to the core

As cities continue to grow, it is imperative to implement strategies such as sustainable construction, energy efficiency, waste reduction and biodiversity preservation to build liveable and resilient urban environments.

Following the lead of innovators such as Mumbai, Barcelona and Copenhagen, cities worldwide must view green infrastructure and sustainability as integral to urban development rather than as an optional add-on. By taking bold steps today, cities can pave the way towards a greener tomorrow, where people and nature can thrive in harmony.

The path to sustainable urban areas requires vision and commitment, but the destination is well worth the journey.

ZHEN QU is a BSc Environmental Geoscience graduate at UCL

Steps to a just transition

Alec Tang considers how breaking down siloed thinking and embracing cross-cutting systems thinking is essential in meeting our challenges

"There is a rapidly narrowing window of opportunity to secure a liveable and sustainable future for all."

This is the stark warning from the Intergovernmental Panel on Climate Change in its *Synthesis Report*, produced for the panel's sixth assessment cycle.

It goes on to reiterate that "...deep, rapid and sustained mitigation and accelerated implementation of adaptation actions in this decade would reduce future losses and damages related to climate change for humans and ecosystems..." and that "...urban systems are critical for achieving deep emissions reductions and advancing climate-resilient development".

The good news is that there are already a broad range of interventions that can deliver 'deep, rapid and sustained' emissions cuts in our urban systems – from low-carbon and active transport to renewable, decentralised energy networks and healthier, more energy-efficient building designs.

The underpinning bases for more resilient and adaptive communities are also increasingly well understood, from the use of nature-based/green infrastructure solutions and the integration of climate risks into urban planning to active investment in community and social cohesion. Many of these opportunities are explored further in IEMA's guidance on decarbonising local development plans.

Not what but how

The challenge is not what we need to do but how we deliver this transition, particularly where transition exacerbates existing inequalities.

For example, the transition to lower-carbon transport – shifting to electric vehicles, public and active transport modes – needs to be done in a way that recognises that many in our communities are currently locked into forced car ownership and dependency on fossil-fuel vehicles. This can stem from lack of finance to invest in new, lower-carbon vehicles, or a need to work in locations and at times that are not well served by existing public transport systems or active mode infrastructure.

Doing nothing to support an equitable transport transition will simply leave already disadvantaged groups locked into fossil-fuel vehicles that will become increasingly expensive to maintain and operate. This further compounds the inequities that have been preventing their transition in the first place.

SHUTTERSTOCK

"There are already a broad range of interventions that can deliver deep emissions cuts in urban systems"

These same issues of equity are found in our energy systems, with low-carbon decentralised systems and their long-term carbon, cost and wellbeing benefits remaining within the domain of those who can afford the upfront investment and whose homes are in spaces that can maximise renewable energy generation.

They are seen in our food systems, where the cheapest food is often the least healthy for people and the planet.

They are seen in our housing system, where improvements to address the health, efficiency and accessibility of our homes are least accessible to those that most need it.

Holistic thinking

The solutions lie in tackling systems in their entirety and seeking transformation across traditionally siloed domains. This is particularly true in urban environments, where our linear thinking has driven us to compartmentalise our city systems. This has been further reinforced by the setup of local administrations, where parks departments sit distinct from stormwater management and flood protection, transport services are isolated from public health, and waste services are largely a logistics operation, rather than an opportunity to educate and redesign our systems of excess.

We will only deliver a low-carbon, equitable transport system if we look at the integrated planning of our land use, bringing amenities like childcare and food provision closer to the people when and where they need them most.

We can only deliver resilient urban environments if we consider the opportunity for localised food production as part of the green space provision that is critical for managing climate-related risks; providing spaces for people to connect and supporting their physical and mental wellbeing. These green spaces can also provide excellent active mode connector routes away from traffic.

We will only realise the opportunities for localised renewable energy to address emissions reduction, resilience, health and energy hardship if we couple it with systems that can share energy within our communities and provide accessible mechanisms for releasing the upfront investment required to install these solutions.

ALEC TANG FIEMA CENV is a member of the steering group for IEMA's Climate Change and Energy Network

Unlimited fines for polluters and a post-Brexit climbdown are this edition's hot environmental topics, writes legislation expert **Neil Howe**

Pollution powers extended

Significant new draft legislation has been published that will give regulators the power to impose unlimited fines for environmental offences. Following a consultation, which had considerable public support, the current limit of £250k for civil penalties is to be scrapped and their scope significantly broadened to target a much wider range of offences.

The size of the penalties will be subject to sentencing guidelines and will take into account the extent of the pollution and degree of responsibility and harm, as well as the polluting company's size and ability to pay. Perhaps crucially, they could be used to tackle the recurring issue of pollution by water companies and breaches of storm overflow permits. The new powers will come under the Environmental Permitting (England and Wales) Regulations 2016.

cedr.ec/96b

Scotland's deposit return scheme delayed again

The start date for the Deposit and Return Scheme for Scotland Regulations 2020 has been delayed again. The regulations make provision for the operation of a deposit return scheme for drinks that are intended to be sold to consumers in Scotland and are contained in single-use packaging made from polyethylene terephthalate plastic, glass, aluminium and steel, and the packaging for them.

The scheme was set to be implemented on 1 July 2022, but an independent review moved the date to 16 August 2023. This has now been pushed back further to 1 March 2024.

cedr.ec/96p

UKCA mark scrapped

The government has announced that businesses will be able to use the EU CE marking indefinitely. Following Brexit, the continuation of EU requirements relating to product marking, i.e. the CE mark, was permitted. This allowed any product bearing the CE mark to be placed on the market in Great Britain until 31 December 2022.

However, the deadline was pushed back on three separate occasions and finally extended until 21 December 2024. It has now been announced that the switch to UKCA marking will be delayed indefinitely.

cedr.ec/96q

NEIL HOWE PIEMA is head of writing at Barbour EHS

IN COURT

There is potential for six water companies to be forced into paying customers millions in compensation as the first collective class action is being brought against them for failing to properly report sewage spills and pollution incidents. cedr.ec/965

Lastly, in case law, in *R. (on the application of Hillingdon LBC) v Mayor of London*, a judicial review of the mayor of London's decision to confirm the controversial emission zone charging order was refused. cedr.ec/966

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ON THE WATCHLIST

Packaging regulations

Despite the parliamentary recess, some notable consultations have been published that could see significant legislation changes over the coming months. A review is being carried out on the draft producer responsibility obligations (packaging and packaging waste) regulations, which will introduce extended producer responsibility (EPR) for packaging. The EPR will require businesses to pay the full costs of dealing with the packaging they supply and use when it becomes waste. It is not now expected to launch until October 2025.

cedr.ec/96r

Scotland reviews EPC scheme

Scotland has proposed reforms of its Energy Performance Certificate (EPC) scheme. The plans will cover both domestic and non-domestic EPCs, although some of the changes apply differently to domestic and non-domestic buildings as their use and energy efficiency context is very different.

cedr.ec/96s

Possible EPC delays elsewhere

There is also some suggestion of delays to the EPC rental target in England and Wales. Two years ago, the government consulted on energy efficiency standards in rented homes and proposed a deadline for landlords in England and Wales to meet mandatory efficiency standards. These proposed deadlines may now be pushed back, along with a potential overhaul of the EPC system.

cedr.ec/964

CHANGING HEARTS AND MINDS

From eliminating single-use plastics and cutting emissions, to building resilience to pandemics, the list of sustainability issues the NHS has to contend with is endless. **Heidi Barnard**, PIEMA, head of sustainability at NHS Supply Chain, explains how she tackles them

Despite facing numerous challenges, the NHS remains a great source of national pride for the UK public, and consistently features among the most important issues for people up and down the country.

As the largest employer in Europe, it also has a huge environmental impact, accounting for around 4-5% of the UK's total carbon emissions and 40% of the public sector's emissions in England.

The majority of these fall within scope 3 of the NHS' carbon footprint – a complex value chain for a vast array of products and services, managed by NHS Supply Chain.

As the organisation's head of sustainability, Heidi Barnard faces the daunting task of ensuring it is consistent with the NHS' target to become the "world's first net-zero carbon national health system" by 2045.

A new challenge

Barnard spent nearly 14 years working in the built environment, before joining the healthcare sector at the Northern Care Alliance NHS Foundation Trust in 2019, and then NHS Supply Chain in September last year. "I wanted a new challenge that would appeal to my interest in social sustainability," she explains. "The healthcare sector really speaks to that, and the link between the climate crisis and health."

NHS Supply Chain manages the sourcing, delivery and supply of healthcare products, services and food for NHS trusts in England and Wales – including everything from toothpaste to MRI scanners – managing more than 7.7 million orders per year across 16,705 locations.

"The first 14 years of my career were all about products and manufacturing processes, which was very straightforward," Barnard says. "But when you move into the healthcare sector, you're looking at things from a very different perspective. It's not about delivering a product, it's about delivering healthcare, which encompasses millions of different products. More importantly, it's about people and about how you make people feel. It's a much more emotionally-led conversation."

> "I wanted a challenge that would appeal to my interest in social sustainability. The healthcare sector really speaks to that, and the link between the climate crisis and health"

Although the workings of the NHS can be similar to those of many other large organisations, there are some very unique considerations that Barnard has to make when it comes to minimising its environmental impact.

All about context

"We're buying on behalf of the NHS, and not one or two products; we're buying millions or in many cases billions of items," she says. "So, for things like personal protective equipment (PPE), theatre caps and aprons, we always need to ask if there are reusable alternatives."

However, she also has to consider how all these products will eventually be used by the clinicians themselves in a hospital setting and abide by medical device regulations. Similarly, when making a large capital investment in a piece of equipment, there are a whole range of considerations.

"When you go out to tender, you will obviously be looking at the environmental impact and the energy efficiency of that product, but it's also about understanding how it is used within a particular diagnostic centre or particular theatre suite to understand

ORIANA FENWICK/SYNERGY ART

what's driving carbon in that patient pathway," she says.

"If we're bringing patients in from miles around, is it worth looking at how we do diagnostics in the community? It's about understanding the whole system side of things, not just the individual product side of it."

At the same time, the health and social care system is facing an unprecedented financial challenge, and Barnard is one of a small four-person team looking to embed sustainability throughout the supply chain.

Behaviour shift

To this end, a key part of her role is influencing the numerous companies and people connected to the NHS to make more sustainable decisions. "We need everyone to come on that journey with us and look at how we can deliver better value for the NHS in terms of financial, social and environmental value, having conversations with all our stakeholders," she explains. "Changing the product is probably the easiest part, but actually changing the behaviour around that is more difficult because

"It's a huge challenge to try to do things differently when you're in the middle of a post-pandemic recovery situation – there's a lot of pressure to deliver"

people get used to what they do, and they've been taught to do something in a certain way. If you've got somebody doing a 12- or 13-hour surgery and they are used to doing it a certain way, changing that is going to take time."

Again, there always has to be consideration of potential knock-on effects for patients. "It's thinking about how changing one item impacts on everything else you'd need for a particular process or procedure," says Barnard. "It's a huge challenge to try to do things differently when you're in the middle of a post-pandemic recovery situation – there's a lot of pressure to deliver."

When it comes to selecting product suppliers, this is guided by the NHS' Supplier Roadmap, which includes a list of key criteria, such as a requirement for carbon reduction plans, and for all procurements to include a minimum 10% net zero and social value weighting.

"The latest tool that the NHS has deployed is the Evergreen assessment, which is a kind of one-stop shop for suppliers to tell the NHS what they're doing on all sorts of environmental impacts," Barnard says. "It allows recognition of companies undertaking third-party auditing because, again, if you think about the breadth of suppliers we've got, trying to tackle that level of assurance becomes mind-boggling in terms of the size of team you'd need to do it."

Plastic problems

Although single-use plastics are prevalent in so many of the everyday products and packaging we all purchase, they are

"There are a few different projects trying to extract plastics ... but it's the infrastructure and behaviours around how we manage those waste materials that are the barrier we need to overcome"

There are regulations concerning infectious and non-infectious waste, and most of it ends up being incinerated

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ubiquitous throughout healthcare owing to factors unique to the sector. "It could be infection control, risk, ease of use, cost or cleanability. It can also be about product efficacy because the plastic within the product has a functional use and there is no alternative at the minute."

The Department for Environment, Food & Rural Affairs (Defra) has announced that businesses will no longer be able to sell single-use plastic plates, bowls, trays, containers and cutlery, starting from October this year. NHS Supply Chain has been making changes where necessary, but shifting away from plastic is not always possible in a hospital setting. "Post-pandemic, we went from having reusable cutlery to single-use cutlery because of the fear of infection control," Barnard explains.

"Infection control often gets positioned as the enemy of sustainability, but they've been some of our best allies when it comes to understanding why we've got to where we are, and how we might do things differently," she adds.

Waste worries

For needles, gloves, syringes and other single-use products, there are regulations that NHS trusts have to contend with regarding infectious and non-infectious waste, but many of these products are destined for incineration.

"There are a few different projects trying to extract plastics and look at the value chain, but again, it's the infrastructure and behaviours around how we manage those waste materials that actually are the barrier we need to overcome," Barnard says. "If you think about how healthcare waste is collected and about how it's transported, there's limited segregation as it is really quite complicated. And again, if you think about a healthcare setting, it's not like you've got acres of space to have lots of different bins for different things."

Global challenges

Barnard joined NHS Supply Chain as the UK was emerging from the pandemic, and also missed much of the shock and confusion caused by the Brexit vote in 2016. However, she is still having to deal with some of the consequences. "Because we are not necessarily doing what the rest of Europe is doing now, our suppliers may have to provide niche products for the UK that add a cost," she says. "However, there is a trend looking more to how we can standardise everything in the net-zero space so that suppliers are all moving in the same direction, and the rest of the world is looking to what we're doing."

NHS Supply Chain was tasked with supplying the PPE required for doctors and nurses to continue work during the Covid-19 pandemic while protecting patients. There were widespread PPE shortages, and the subsequent scramble to secure more supplies led to PPE reportedly being procured from organisations with no experience, deliveries that were unsuitable for use, and a lack of transparency surrounding the deals struck to source PPE.

The PPE shortages once again raised questions around whether a fully public service – NHS Supply Chain is a private organisation owned by NHS England – that did not outsource contracts would have been better prepared. "The experience has helped us build resilience since the pandemic, in terms of our forecasting and understanding what we're going to need to have stocks of at certain times," Barnard explains.

Mutual cooperation

Another key area of her work concerns modern slavery, and all suppliers to the NHS must now undertake an appraisal using a Modern Slavery Assessment Tool. "I deal with evaluating labour standards and adding social value," she says. "There are known issues that we have to manage, and understanding our supply chains, the raw materials, and everything else that goes into our products and services is a fundamental part of that story."

Eliminating modern slavery and responding to pandemics are just a couple of the global challenges that highlight the interconnectedness of supply chains and the benefits of mutual cooperation – something that is going to become increasingly important as the climate crisis intensifies.

"Wildfires and other big weather events may shut down a factory that produces a specific component, which has a knock-on effect for the NHS, for example. We've seen that already with microchips in equipment, and supply chains being impacted by climate changes. Every day really is a school day when it comes to determining demand patterns and supply issues."


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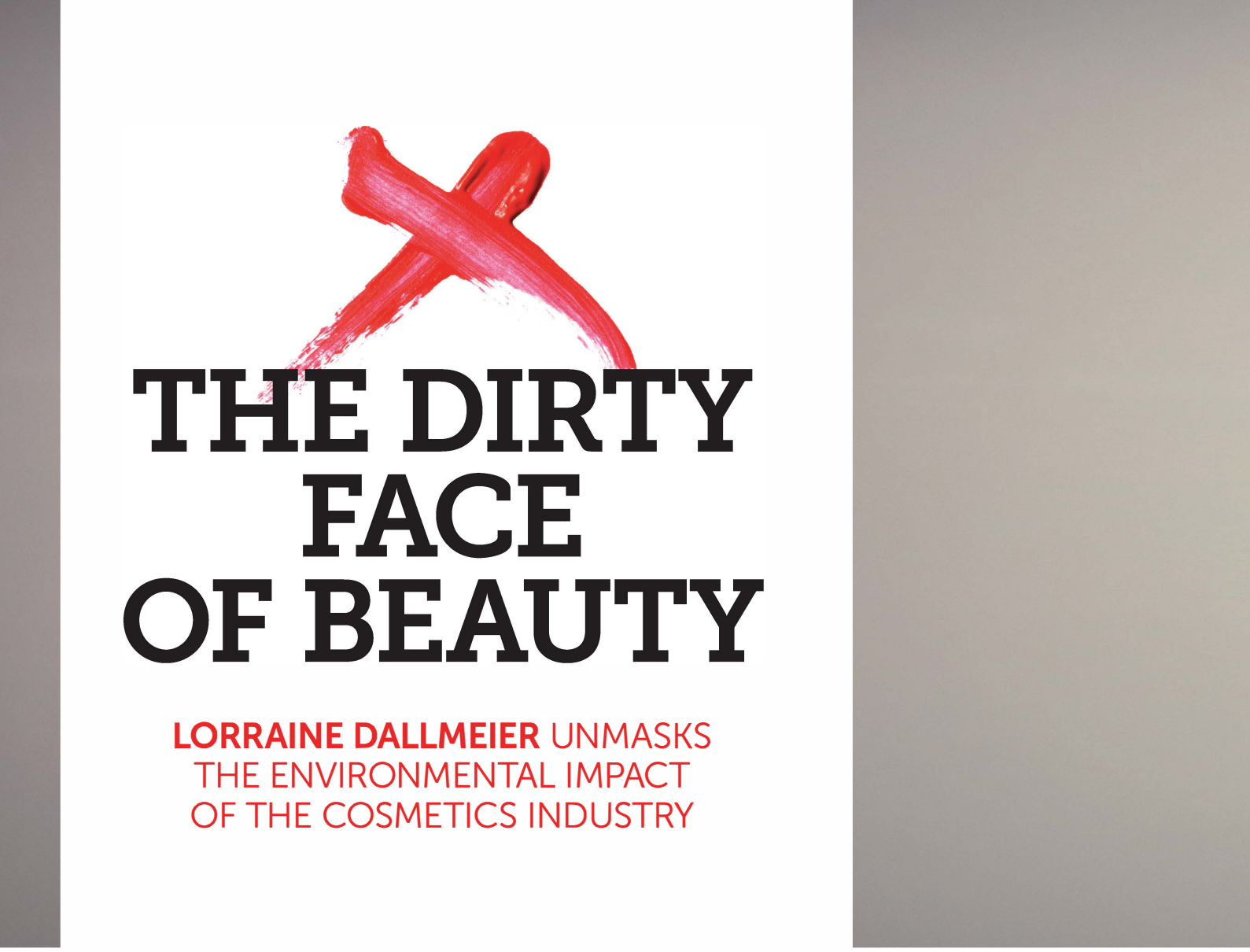

THE DIRTY FACE OF BEAUTY

LORRAINE DALLMEIER UNMASKS THE ENVIRONMENTAL IMPACT OF THE COSMETICS INDUSTRY

In the drive to make consumer products more sustainable, arguably no sector has been more overlooked or misunderstood than that of cosmetics. This oversight may result from the beauty industry being viewed as frivolous, but the reality is that the $500bn+ (£393bn) sector is one of the world's most unsustainable industries.

Personal care uses vast amounts of agricultural, chemical and packaging resources to produce billions of products that may be designed to go on our bodies, but inevitably end up in waterways and landfills. Most of them have been created using the industry's traditional 'take, make, dispose' model, meaning that our personal care habits pollute ecosystems with their non-biodegradable formulations and packaging. Every single plastic lotion bottle you've ever owned is most likely still somewhere on our planet.

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Beauty's toxic tactics

Greenwashing dominates the narrative in cosmetics. The industry refuses to acknowledge what sits at the heart of its issues – that beauty's very existence hinges on telling people they're inadequate as human beings, which, in turn, drives mass consumption. The messaging is visible for all to see. We're told that we're not young enough, not smooth enough, not straight-haired enough, not fragrant enough, not attractive enough, not white enough. Inadvertently, all of us have internalised this messaging. The average woman now keeps around 40 makeup products on her bathroom shelf.

To make matters worse, the beauty industry has a tendency to invent issues to drive product sales. Cellulite is not an abnormality or disease but was instead framed by the cosmetics sector as an unsightly feminine condition that needs to be treated, despite a 2015 evidence-based review concluding that cellulite products do not work. Similarly, the shampoo sector told us we should be washing our hair every day. As recently as the 1950s, most people washed their hair once a week, despite modern liquid shampoos being invented decades before.

Most telling of all, Eugène Schueller, the founder of L'Oréal – the largest cosmetics company in the world – when asked about his marketing strategy in the 1930s is alleged to have said "tell people they're disgusting, they don't smell good and they're not attractive". These words still live on today in virtually every advertising campaign we see. If beauty is genuinely serious about becoming more sustainable, it needs to dramatically change its narrative. It also needs to embrace circularity.

Unpacking cosmetic waste

The personal care market is deliberately opaque when it comes to reporting its consumer waste streams but is said to create 120 billion units of plastic packaging per year. Very little of this is reused or recycled. Furthermore, some of the personal care packaging we've been using for years isn't recyclable. Several cosmetic packaging suppliers are now undertaking research and development to catch up with sustainability demands but, even then, are confusing recyclability with circularity.

In response, a few pioneering entrepreneurs are rolling out return-and-refill schemes, which allow shoppers to drop off or post back their empties. Anecdotal evidence suggests that initial trials have been a success, although the first participants of such schemes will be self-selecting. It won't be easy to change mass consumer habits around beauty waste, but regardless of how long it takes to change behaviour, the future norm will eventually need to be to return and refill.

> "Every plastic lotion bottle you've ever owned is most likely still on our planet"

Solid choices

Shoppers can go one step further by choosing personal care formulations that are designed with sustainability in mind. Many of the smaller, independent players (the so-called 'indie' beauty brands) are actively championing solid formulations, such as shampoo bars and lotion bars. As a result, the big players are starting to catch up and are now introducing these types of products to mainstream retail.

Solid formulations are longer lasting and can be multifunctional. The beauty sector heralds them as 'waterless' and claims that they are the solution to the industry's sustainability problems. Most cosmetic formulations contain over 70% water, while solid alternatives do not. Whether they actually save a significant amount of water is debatable, given that they contain high percentages of butters, oils and surfactants, which are either lab synthesised or obtained from agriculture. Being 'waterless' inside the packaging doesn't negate a product's water footprint. Nonetheless, they could allow us to drastically reduce the number of products on our bathroom shelves and the impact of shipping high-water-content products.

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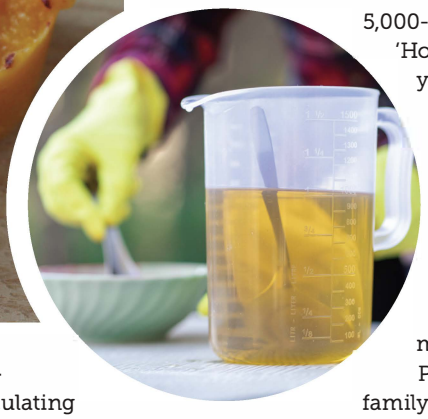

Home formulation is taking off, with many people worldwide making their own products

Eco-design in cosmetics

Biotechnology is also gaining ground in cosmetics, with certain chemical compounds being lab grown using yeast cultures. This technique shows great promise but currently focuses on active ingredients that are added in tiny quantities to formulations, although it may help prevent the overharvesting of certain cosmetic crops. Consider that it takes at least 3,000kg of rose blossoms to produce 1kg of rose oil (that's 1.5 million petals), while the global rose-oil sector is forecast to grow by 6.8% year on year as a result of consumer demand.

But don't expect biotech to generate all our cosmetic ingredients. The bulk of most mainstream cosmetics still consists of water and palm-oil-derived and fossil-fuel-derived ingredients, which all bring additional environmental challenges. According to the Plastic Soup Foundation NGO, the products we put on our skin and hair use more than 500 different microplastics, including liquid plastics.

Conversations around eco-design are growing though, with scientists increasingly talking about green chemistry, using upcycled ingredients from agro-waste, calculating the grey-water footprint of formulations and determining the levels of ecotoxicity caused by dispersing rinse-off products into waterways. Unfortunately, this burgeoning interest in eco-design doesn't appear to extend to operational sustainability commitments. According to a recent report by the Carbon Trust, none of the world's 10 largest cosmetics companies have set an independently validated net-zero target, while three of these companies have failed to commit publicly to a net-zero target at all.

As beauty consumers, the challenge we have is determining what constitutes greenwashing, which isn't helped by the way the cosmetics industry enjoys blinding us with science at every turn. Through 120 years of successful marketing campaigns, the industry has led us to believe that only chemists can make skincare products. Their language and behaviour reflects this myth. Watch for the white lab coats next time you go to the beauty area of a department store or see a TV advertisement for a new high-performance serum that will magically erase our wrinkles. The 'science-washing' is ubiquitous and, together with insecurity-driven messaging, forms the basis for today's cosmetic marketing campaigns.

> "Beauty's sustainability initiatives often end at the factory gates or never materialise at all"

The DIY beauty revolution

The good news is that we have at our fingertips the ability to step away from the madness of beauty. Humans have formulated their own cosmetics for millennia, with the oldest known skincare formulation found on a 5,000-year-old Egyptian scroll, titled 'How to transform an old man into a youth'. The fundamental principles of cosmetic formulation haven't changed dramatically in that time either – emulsification, gelling, warm blending, distillation, enfleurage and preservation are all techniques still used today by ingredient manufacturers and chemists making our cosmetics.

Picture households blending up a family-sized batch of lotion, pressing their own shampoo bars or whipping up a hand balm. Sound far-fetched? Home formulation has taken hold globally, as thousands of people now formulate their own skincare and haircare products. Google 'DIY beauty' to see how much this movement has grown. Arguably, the democratisation of formulation would allow consumers to take control of their personal care needs – or buy from local indie brands that reject the harmful beauty marketing narrative.

We need a better solution to continuing with business as usual. When we strip away the talk of recyclability and green production techniques, beauty's sustainability initiatives often end at the factory gates or never materialise at all. Last year, when asked how Unilever would achieve net zero from carbon emissions generated by consumers using its products, its CEO very honestly – and terrifyingly – answered: "I have no idea."

As environmental professionals, we should do more to scrutinise this sector and hold it to account, as well as change our own habits as consumers. The era for allowing beauty to be in the eye of the corporate beholder has passed.

References can be found in the online version of this article.

LORRAINE DALLMEIER MIEMA CEnv is the CEO of global formulation school Formula Botanica and the host of the Green Beauty Conversations podcast

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FEELING THE HEAT

As the impacts of climate change accelerate, so does heat stress and ill health among NHS workers. **Tom Pashby** reports

The climate emergency is often illustrated with vulnerable people in the Global South experiencing heat stress due to poor or non-existent climate adaptation measures, such as access to suitable buildings and clean water. What has been less well studied is the impact of extreme heat on workers in the UK who are not typically seen as vulnerable.

Heat-stress-related illnesses experienced by workers in the so-called developed world are likely to increase because of climate breakdown, despite better access to cutting-edge technology and building design compared with those in the majority world.

The UK faces many obstacles in attempting to reduce the likelihood of workers experiencing heat stress. These include an ageing building stock, which was designed to keep heat in when the climate was cooler, infrastructure that was built at a time when the urban heat island effect was not fully understood, poor levels of education among the public about how to keep cool and hydrated, and a lack of coordination between government, developers and retrofitters.

Dr Maddy Wedge-Bull, a junior doctor from Brighton, says the NHS hospital where she works in Chichester "is always too hot".

"Even in the winter, it's way too hot, because we have the heating on all the time. At the moment [in summer] it is worse, because we have no way to regulate that heat and keep it cool. The buildings in the UK are just not designed for hot weather."

Even newer buildings aren't constructed to withstand heat, she adds. "The first one I worked in, around nine years ago, was built about 25 years ago, and that was like a greenhouse in summer."

Keep cool

Addressing heat stress in workers in ageing buildings is not simply a matter of turning down the thermostat or commissioning more effective insulation. There are a whole series of unhelpful culturally embedded assumptions about the UK – for example, that it is temperate with few heatwaves, and that air conditioning is only needed in countries that are hotter than the UK. Such assumptions need to be overcome in order to provide conditions in the UK that are better for workers' health.

Wedge-Bull says: "There are more reports of staff becoming exhausted and collapsing from the heat, but looking after yourself in the heat is not something that is really drilled into you at medical school."

As things stand, action to reduce exposure to heat stress is piecemeal and takes more of a bottom-up approach, which some would argue is inadequate given the systemic nature of the climate emergency. Global average temperatures have risen 1.2°C since the Industrial Revolution, which has increased the intensity and frequency of heatwaves in the UK.

"With the government focused on decarbonisation as its key response to the climate emergency, the market is reacting to the need to adapt our buildings"

"Bringing old buildings in line with modern energy efficiency, ventilation and cooling standards can be difficult because of the materials used in the original build"

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With the government focused on decarbonisation as its key response to the climate emergency, the market is reacting to the need to adapt our buildings.

While many people in the UK do work in exposed environments, such as construction and agriculture, others are employed in the services sector, which relies heavily on older buildings for offices.

Rebecca Armstrong, managing director at retrofitting company Making Energy Greener, says: "We're really interested in looking at a building in its current state, rather than dismantling the whole building, with all the carbon that removing that building and replacing it with a new one would entail. It's where you remove some of the existing structure and refit it using modern installation techniques. But it's a huge task."

Armstrong says bringing old buildings in line with modern energy efficiency, ventilation and cooling standards can be difficult because of the materials used in the original build. This is further complicated if a building is 'listed'.

Firms such as Making Energy Greener are only able to retrofit a relatively small number of buildings, and yet most of the UK's housing stock needs to be assessed and potentially brought up to date.

A need for speed

To retrofit at the scale and speed required, there may need to be a shift in the attitude of policymakers, an increase in the capacity of businesses providing retrofit services to respond, and the resources of government, to rise to the challenge of heat stress experienced by workers in buildings.

It is unclear whether there is enough awareness about the lack of action on preventing heat-stress-related health issues in the UK. A best-case scenario is that tackling heat stress in workers is a 'known unknown' for decision-makers and will be dealt with soon.

The worst-case scenario is that it remains a niche issue with too little attention given to retrofitting buildings and informing workers about how to look after themselves.

With the UK expecting a rise in hotter and longer heatwaves, it is critical to resolve the situation.

TOM PASHBY AIEMA is a digital journalist at IEMA

Road to recovery

Chris Seekings investigates what IEMA members are doing to reduce the impact of medical services on the climate and to provide sustainable healthcare for all

It's undeniable that climate change is having an increasingly negative impact on our health. Heat-related illnesses such as heat stroke and chronic kidney disease are on the rise, air quality is worsening, food security and water quality are deteriorating, diseases are emerging in new parts of the world, and climate-related weather disasters are destroying lives.

Indeed, between 2030 and 2050, climate change is expected to cause around 250,000 additional deaths per year from malnutrition, malaria, diarrhoea and heat stress, while the direct financial costs are estimated to be up to $4bn (£3.2bn) annually by the end of this decade.

But while climate change affects health, our healthcare systems are also having an impact on the climate. The sector is responsible for almost 5% of the world's greenhouse gas emissions, and if global healthcare were a country, it would be the fifth-largest polluter on Earth.

To try to combat this in the UK, in January 2020, the 'Greener NHS' campaign was launched to mobilise the service's 1.3 million staff to work towards becoming "the world's first net-zero-carbon health service" by 2045. And as of May this year, 22 countries had committed to delivering net-zero health systems.

Turning to technology

Significant progress has been made, and IEMA partners have been instrumental in devising schemes to ensure sustainable healthcare for all.

One of which is the Association of British HealthTech Industries (ABHI), which supports health technology firms in providing products and services that help people live healthier lives. The sector covers medical devices, diagnostic technologies and digital health solutions, and is improving the sustainability of the healthcare system in several ways.

"Although potentially a difficult task, changing the way we are delivering healthcare can have a positive impact on the planet, as was shown throughout the pandemic," explains Addie MacGregor, sustainability executive at ABHI. "By moving to a system of remote monitoring, remote triage for assessing the need to visit a healthcare facility, and apps to reduce risks and cases of Covid, we did things differently, while maintaining patient safety and, crucially, reducing our emissions in the process."

> "Wearable medical devices ... reduce the need for as many hospital or GP appointments"

Wearable medical devices enable patients to be monitored remotely, reducing the need for as many physical hospital or GP surgery appointments, which cuts emissions from travel and the resources needed for physical visits.

From shrinking PCR machines from the size of a room to being able to sit on a table, to the use of robotics in surgical procedures, the healthtech industry is enabling a more efficient healthcare system and cutting waste, MacGregor says, "moving in the direction of what is best for patient, population and planet".

Sustainable supply chains

Some of the most crucial work being carried out by sustainability professionals in the NHS is focused on cutting its carbon emissions. These account for 4-5% of the UK's total emissions, the majority of which fall within scope 3 of the NHS' carbon footprint.

NHS Supply Chain manages the sourcing, delivery and supply of healthcare products, services and food for NHS trusts and healthcare organisations across England and Wales, influencing emission levels across the value chain. "For us, whose role it is to procure for the NHS, this means we have a significant part to play," says the organisation's head of sustainability, Heidi Barnard PIEMA. "We're looking at how we can influence and work with both our suppliers and NHS trust customers to change their behaviours to deliver net zero."

To this end, the NHS Net Zero Supplier roadmap was approved by the NHS England board in September 2021, setting out clear milestones for anyone wanting to supply the NHS. These include a requirement for up-to-date carbon reduction plans, and for all procurements to have a 10% net zero and social value weighting. From June, suppliers have been asked to complete an Evergreen Sustainable Supplier Assessment, while they must also undertake an appraisal using a Modern Slavery Assessment Tool.

"We are also looking across our portfolio and identifying the areas that need work, from our logistics contract to each of the frameworks we provide, to how we present and give our customers information and data to be able to make informed choices," Barnard says. "Collaboration is key, as we all need each other to reach our net-zero ambitions."

Innovative models of care

Looking beyond supply chains, anaesthetic gases currently account for 5% of NHS carbon emissions within its direct control. The largest proportion of these come from nitrous oxide – a greenhouse gas 300 times more potent than carbon dioxide.

Newcastle upon Tyne Hospitals NHS Foundation Trust has led the way in trialling innovative new-to-UK equipment to capture and destroy this gas, which is used in many clinical settings, including in maternity, endoscopy and dentistry.

"The UK's first 'climate-friendly' baby was born at the Royal Victoria Infirmary in September 2021 using this N_2O capture and destruction technology, previously only available in Scandinavia," says Laura Middlemass MIEMA CEnv, assistant sustainability manager at the trust. "The technology converts up to 99% of exhaled N_2O into harmless nitrogen and oxygen, and also reduces staff exposure to exhaled nitrous oxide, so contributes to a healthier working environment for staff."

As the largest employer in Europe, the more NHS staff that are familiar with sustainability issues, the better. The trust

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"The UK's first 'climate-friendly' baby was born at the Royal Victoria Infirmary in 2021"

has around 400 'Green Champions' and a growing network of 'Green Champions Plus' workers who have undertaken sustainability training so that "whether you are a data analyst or a laboratory manager, you will understand how your role impacts on sustainability, and what sort of changes you can make," says Middlemass. "A number of these Green Champions Plus have been pivotal in implementing a 'model for sustainability' in their departments – a framework developed to embed sustainability into departmental strategies and culture."

Work on wellbeing

As part of ensuring the wellbeing of its staff – and boosting biodiversity – the Newcastle trust has established a baseline biodiversity metric score and developed action plans for improvement, starting work on hedge and tree planting, bird and bat boxes, and wildflower and bulb planting.

Meanwhile, Nottinghamshire Healthcare NHS Foundation Trust – one of the largest community and mental health trusts in the country – has formed an in-house health and wellbeing service, which combines staff health and wellbeing, occupational health and staff counselling.

Available to all its workers, the package is "preventative, proactive and responsive", says Lynn Walker, MIEMA, CEnv, head of sustainability at the trust. "We know that an organisation is nothing without its people, which is why we are committed to creating a great culture and environment for our colleagues, and one where their health and wellbeing is fully supported," she continues. "Projects have a focus on maximising the use of our green space for therapeutic benefit, but also as a space for staff, carers and visitors to the trust to access."

The trust's occupational health service has enabled it to provide colleagues with timely access to a multi-professional team, staff counselling via self-referral or manager referral, a fast-track musculoskeletal physiotherapy service, as well as various additional benefits.

CLIMATE-FRIENDLY PRACTICE

Learn more about the sustainability-related work of:

- **ABHI: www.bit.ly/sustainable-healthtech**
- **NHS Supply Chain: www.bit.ly/nhs-supply-chain**
- **Newcastle upon Tyne Hospitals Trust: www.bit.ly/Newcastle-models-of-care**
- **Nottinghamshire NHS Trust: www.bit.ly/Nottinghamshire-wellbeing**

CONCRETE PLANS

Rick Gould looks at the options for decarbonising cement

Two centuries ago, Joseph Aspdin of Portland, England, an entrepreneurial bricklayer and stonemason, invented the forerunner to modern cement when he made a chemical binder for concrete by baking finely ground chalk and clay in a lime kiln.

Aspdin's invention, now enhanced and known as Ordinary Portland Cement (OPC), was a quantum leap that improved on the Romans' two millennia-old, lime/volcanic ash/seawater recipe for concrete. Now, more than 3,400 cement plants worldwide make four billion tonnes of cement annually.

Cement is a versatile and critically important building material, and one which, according to the journal *Nature*, will have a crucial role in climate-resilient construction and adaptation.

Conversely, cement production is carbon intensive and contributes around 8% of global CO_2 emissions. Although the sector has made enormous progress in reducing its CO_2 emissions per tonne of product since 1990, particularly in Europe and North America, the two biggest challenges lie in the fuels used and the chemistry of the process.

Two-pronged CO_2 generator

OPC consists mainly of four types of compounds based on oxides of iron, aluminium and silicon, all bound to calcium oxide. This last compound is made by heating ground calcium carbonate from limestone in a rotary kiln with other materials such as silicates and alumina from fly ash, at very high temperatures. Coal, natural gas and waste-derived fuels typically provide the energy sources. The resulting 'clinker' is then ground into cement.

The problem is that CO_2 is a by-product of calcination, a process where calcium carbonate is transformed into calcium oxide. Therefore, changing to carbon-free fuels such as hydrogen still means up to 60% of the CO_2 emissions would remain, owing to the chemistry of limestone. In terms of numbers, making OPC creates an average of 700kg and as much as 900kg CO_2 per tonne of cement produced, depending on the fuel used. So how can the sector decarbonise?

> "Cement is a versatile building material, and one which ... will have a crucial role in climate-resilient construction and adaptation"

In its *UK Concrete and Cement Industry Roadmap to Beyond Net Zero*, the Mineral Products Association has identified seven technology levers for decarbonisation, while the biggest reductions can be achieved in the kiln processes. In simple terms, there are five options here: carbon-free energy sources, process changes, end-of-pipe solutions, alternative raw materials, or combinations of all of these.

Decarbonising the energy source

Green electricity and hydrogen have already shown enormous promise. For example, Hanson Cement, in the Heidelberg Cement Group, has trialled hydrogen in the main burner, in combination with other net-zero energy sources at its Ribblesdale works in Clitheroe. If used for the entire kiln system, it could prevent 180,000 tonnes of CO_2 emissions per year. Elsewhere, this year the French manufacturer Vicat SA will be trialling a 330 megawatt electrolyser to make hydrogen from water, to provide fuel for its Montalieu-Vercieu plant. Yet regardless of the energy source, there is still the

challenge of CO_2 emissions from calcination. This requires a different solution, notably carbon capture, utilisation and storage (CCUS).

Capturing the carbon

There are three main methods for capturing CO_2; one of the most promising is post-combustion amine scrubbing, already used at a few small power stations and planned for multiple other industries. The waste-combustion gas is passed through a scrubbing solution where the CO_2 binds chemically to an amine-based solvent. The resultant compound is then recycled, with the CO_2 removed and compressed for permanent storage or use elsewhere.

Although there have been small-scale pilot plants, until now cement companies have not scaled up CCUS to process all of the waste gases from a cement plant. However, Heidelberg Materials is building the world's first full-scale amine-based CCUS facility at its Brevik plant in Norway, which is scheduled for completion in 2024. The new plant will capture 400,000 tonnes of CO_2 annually. The company also plans to build more CCUS units at its other cement plants, such as the Hanson Cement works at Padeswood in Wales. This will feed into the government-supported hub for CCUS and capture 800,000 tonnes of CO_2. The project will dovetail with the HyNet North West industrial hydrogen and CCUS cluster.

Although the CCUS technique is effective, it is also operationally complex, expensive to build and requires lots of energy. Brimstone, a small start-up company in the US, has discovered how to make OPC that avoids CO_2 as a by-product and, in the longer term, potentially gets round the need for CCUS.

> "There are three main methods for capturing CO_2; one of the most promising is post-combustion amine scrubbing"

Portland cement without the CO_2

Brimstone in Oakland, California, uses basalt and other silicate rocks that contain calcium oxide, instead of limestone. These rocks are ground up and processed using a novel chemical technique to extract the calcium oxide. Moreover, the alternative raw materials also produce the supplementary materials instead of having to add them from other sources such as fly ash, while basalt and other silicates are much more abundant than limestone.

In terms of energy use, the process has similar demands to the traditional method for making OPC. However, because Brimstone's process begins with a carbon-free feed rock, it eliminates up to 60% of emissions from the start. Additionally, the Brimstone process also produces magnesium oxide, which then reacts with CO_2 in the air to produce magnesium carbonate. In other words, the process is carbon negative, and independent tests have verified this.

Brimstone was started by two friends: environmental chemist and engineer Dr Cody Finke, and fellow engineer Hugo Leandri, who wanted to find an alternative way of making OPC and decarbonising the process.

Materials used in the construction sector typically need testing and certification before their manufacturers and suppliers can sell them. This is not simply to assure performance, it's also about safety, which is critical for cement, considering its uses. Recently, a third-party test laboratory evaluated and certified Brimstone's OPC to the US ASTM C150 specification, which is the key standard for OPC.

ASTM C150 specifies the composition, safety and performance of OPC; this means that Brimstone's product is the same as OPC made from limestone and waste-derived supplementary cementing materials and can be used for the same applications.

The challenge that Brimstone faces is the same as that for carbon-free fuels and CCUS – acceptance and scaling up the infrastructure and processes for the global cement sector. During this transformation, it is likely we will need all available decarbonisation techniques and, as Heidelberg's full-scale CCUS plant and the UK's HyNet North West hub have already demonstrated, governmental engagement and political will are crucial to make it happen.

RICK GOULD is an air-quality adviser at the Environment Agency. He writes in a personal capacity

KEY FACTS ABOUT CEMENT

- **We use more cement than any other human-made material.**
- **Currently, manufacturers produce four billion tonnes of cement annually and this is projected to rise by about 50% by 2050 because of increasing urbanisation.**
- **Portland cement is the most common type, which is difficult to decarbonise because at least half the CO_2 emissions result from chemical reactions in the kiln.**
- **Depending on the energy source used, Portland cement production emits an average of about 700kg CO_2 per tonne of cement and as much as 900kg CO_2 per tonne of cement.**
- **Portland cement was invented in 1824 and the process of making it has hardly changed in the past 100 years.**
- **Cement production emits about 8% of global emissions of CO_2 and around 5% of greenhouse gases annually.**
- **If cement production were a country, it would be the third-highest CO_2 emitter after China and the US.**

LEADING THE WAY

IEMA CEO Sarah Mukherjee MBE talks to **Rachel Kyte** about diplomacy, women's leadership, diversity and transforming energy systems

To say that Rachel Kyte has had an impressive career would be to seriously downplay her achievements, with the academic having received numerous awards for women's leadership, climate action and sustainable development.

She has served as special representative of the UN secretary-general, vice-president of the World Bank, and chief executive officer of Sustainable Energy for All, so she knows more than most about the diplomacy needed to deliver real change on the global stage.

Her journey has not been an easy one, with Kyte having to overcome adversity and prejudice to reach the leadership position she holds today.

Her passion lies in tackling poverty and the unequal effects of climate change, and this year she stepped down as dean of the Fletcher School at Tufts University to focus solely on her "decades-long fight to address the impacts of climate change and energy scarcity".

Did you always view sustainability as something that you wanted to devote your career to?

My dad was a line engineer for the electricity board, but was laid off when the electricity boards were privatised. He reinvented himself as an energy-efficiency guy, so I picked up a whole bunch from him through osmosis. The other thing that happened, while I was growing up in east Lincolnshire, just outside Boston, was that the US decided to base nuclear warheads there because of geopolitics, and that politicised me. I became very interested in our place in the world and Europe, and the relationship between East and West. The issue that really bound us together in the 1980s was the environment, because if sulphuric acid was coming up from filthy power plants in the East, it was raining down on the West. Suddenly, politics, the environment and peace all became fused in my mind.

You must have had an inner certainty to perhaps not listen to the voices telling you that you couldn't achieve what you wanted to?

I was not aware of any certainty inside, but there were a series of women who saw in me something that I wasn't aware

enough to see in myself. From my headmistress, Jessica Mary Webb, at Boston High School, to my guide leader, Rita Sandefur, at Girl Guides, and Jane Lewis, who taught me about etiquette, and how to speak in public. These were the women who mentored me and gave me confidence.

I know that equity, climate change and sustainability are close to your heart through your work. Do you think that path is available for young people, wherever they are in the world?

No, I think it's become more complicated. Across the western world, there's been a dilution of what we used to call associative life, or 'vie associative' – the belonging to the fabric of community and society. Opportunities for young people, especially people from low-income or vulnerable backgrounds, have vastly diminished because of cuts in public services. When I think back to my youth, meeting people who were different by class, race, gender, identity, whatever, was really important – rubbing along with people who are different from you. It's critically important that young people from every walk of life get to mix with each other in places that challenge or inspire them in a way that daily life might not, and I think we've got far less of that.

You are very direct in your assessment of the way politicians or governments are dealing with climate change and injustice. Why is that?

My goal is not to berate, but there's an extraordinary responsibility that comes with public office, and we don't have time to mess about. That is the reason to speak out clearly and broadly and to make this part of a public debate. This is not a debate among scientists. This is not a debate among technocrats. This is about the choices we're making as voters, congregants, members of a gardening club, as community members, so we shouldn't dress everything up in overcomplicated language.

You've described yourself as an activist and a bureaucrat. What is the best way to get political messages across to the public?

There's been a lot of writing about different leadership styles, and research around reciprocal vulnerability, which is the concept that expressing your own vulnerability as a leader allows people to come together to try to find solutions. Some of the leaders that did well at the beginning of the pandemic were women, and their style of engagement was similar to their messaging on climate. They say, 'look, by 2040, we have to be net zero. We don't have all the answers, but we've got great scientists, great businesses and great communities and leaders, and together we're going to figure this out', which is in stark contrast to the bombastic Trumpian leadership and the chaos of UK governance.

Rachel Kyte shakes hands with Ban Ki-moon, then UN secretary-general, at a Sustainable Energy for All briefing

ALAMY

> "Opportunities for young people ... have vastly diminished because of cuts in public services"

Is it that different having a conversation between two heads of government and between members of a local community?

It's all about relationships. There's a lot of statecraft that is brought to bear in terms of how governments are run, how they engage with each other, how diplomacy is conducted, how international organisations are owned and led, but at the end of the day, if a relationship can be built, then things can go fast, and things can get done on the basis of trust.

This Pride Month, you wrote a piece about your experiences, saying that as a queer woman, you're seen as bossy and abrasive, while men are seen as decisive. Is that getting better?

I wrote that piece because, as dean, I would have students coming into my office and asking me whether or not it was possible for them to have an international career; students from Nepal, India or Nigeria, places where it's difficult to be able to be free to express your sexual orientation. I would just talk to them about the fact that you have to assess every situation, every room, every new organisation, every new committee, and ask if you think it is safe to be clear about who you are, or if it's going to have a negative impact. Depending on how privileged you are, and where you are from, it can be extraordinarily difficult. We've made enormous progress, but we've still got a journey to go on.

One of your TED talks recently was about ways to keep cool without warming the planet. Tell us about that.

Air conditioning is increasingly a necessity but, done wrong, a real dilemma, because it has to be air conditioning that's affordable to the people who need it, and must be free of HFCs, which are pollutants in cooling. It also needs to be energy efficient, otherwise we blow past all our projections around energy demand. The Global Cooling Prize a few years ago brought together hundreds of teams from around the world looking at how to produce cost-effective, affordable, non-polluting, hyper-efficient air conditioning – now we need to manufacture it at scale.

Where do you see your career going?

My decision to step down as dean was so that I could really get back into this work on energy and how to finance it full time. It's a critical story, because it's the fight back against the narrative, which is that we just have to continue with the old energy systems of the past. No, actually, we can decentralise energy, we can digitalise energy, we can decarbonise energy, democratise energy, and if you do that, you actually start democratising society. I hope to continue to make progress there.

COMING SOON
New podcast:
Sarah Mukherjee MBE in conversation with Rachel Kyte

EXACTING STANDARDS

In the first of a two-part series, **John Dora** provides an update on ISO 14090:2019 *Adaptation to climate change*

This first article covers what's new since 2019, how ISO 14090 and its framework is being supported by new standards and how the ISO strategy for further adaptation standards works in Europe – within the pan-European Standards bodies CEN/Cenelec. It will also show how organisations in many sectors have been using the ISO 14090 framework to improve society's resilience to the urgent challenges of adaptation.

In a follow-up article I will look at how the Environment Agency and the Scottish Environment Protection Agency regulatory teams are promoting lighter regulation for organisations that adopt ISO 14090's international best practice.

What's new?

ISO 14090 has been well received and is gaining traction as the climate changes rapidly. I chair ISO's strategy group, which aims to publicise existing standards and develop new ones. New standards since 2019 include:

- **ISO 14091:2021** *Adaptation to climate change – Guidelines on vulnerability, impacts and risk assessment*
- **ISO 14092:2020** *Adaptation to climate change – Requirements and guidance on adaptation planning for local governments and communities*
- **ISO 14093:2022** *Mechanism for financing local adaptation to climate change – Performance-based climate resilience grants – Requirements and guidelines*
- **BS 8631:2021** *Adaptation to climate change – Using adaptation pathways for decision-making*

The ISO strategy prioritises:

- **Identifying uncertainties:** guidance addressing uncertainty in risk assessment and adaptation
- **Risk assessment:** examples of risk assessments and what makes them robust
- **Threshold analysis:** guidance on what these are and dealing with them, e.g. tipping points
- **Developing adaptive capacities:** how to improve organisational adaptive capacity with case studies
- **Preparing a climate change risk assessment:** including relationships between asset management, climate risk assessment and adaptation.

ISO is doing more to signpost its adaptation tools with the publication of a brochure on the ISO standards. This will also refer to a white paper on how ISO 14001 *Environmental Management Systems* can be supported by ISO 14090 (see www.bit.ly/ISOwhitepaper).

Who's using ISO 14090?

We have seen interesting and varied uses of ISO 14090, and IEMA offers accredited training on it. As well as being used to aid the drafting of an adaptation plan – its initial purpose – the standard has been used to gauge adaptation activity against international best practice; to frame research into transport policy; and as part of general guidelines on adaptation (see left for more).

Since ISO 14090 was published four years ago, many organisations have benefited from its structured yet flexible framework for adaptation to climate change. New standards to support it are evolving, through the ISO adaptation strategy and in other standardisation bodies. Encouragingly, experience in its application is leading to wide uptake across global organisations and institutions in many sectors.

EXAMPLES OF INITIATIVES

INTERNATIONAL TRANSPORT POLICY GUIDANCE: ADAPTATION FOR TRANSPORT RESILIENCE TO CLIMATE CHANGE – A POLICY GUIDE FOR LOW-INCOME COUNTRIES (LICS)

Targeted at African and South Asian LICs' public and private transport providers to increase road, rail and urban transport resilience, this was a joint production for IMC Worldwide by the University of Birmingham and TRL, and funded by UK Aid. The core structure used the ISO 14090 framework in analysing the capability of existing policies.

UK RAIL REGULATOR

The regulator needed to analyse operator plans. It used the ISO 14090 framework to gauge Network Rail's Weather Resilience and Climate Change Adaptation plans against international best practice. Lessons learned include aligning metrics to suit the system, i.e. with the movement of people and freight rather than against timetables.

UIC – INTERNATIONAL UNION OF RAILWAYS

This global organisation for railways has 200 members in 95 countries. It published *Rail Adapt* in 2017, using ISO 14090 as source material. It is strong on adaptive capacity recommendations.

FIRST NATIONS INFRASTRUCTURE RESILIENCE TOOLKIT (FN-IRT)

The Ontario First Nations Technical Services Corporation's climate risk assessment module is based on the www.PIEVC.ca protocol (FN-PIEVC); PIEVC refers to ISO 14090.

JOHN DORA is a director at Climate Sense (www.climatesense.global) and a Royal Academy of Engineering visiting professor at the University of Birmingham. He chaired the team that drafted ISO 14090 and is an international expert on adaptation

ALL AT SEA

With 90% of the world's goods transported by ship, the maritime industry is confronting major challenges to safety and supply. **Huw Morris** reports

As maritime mysteries go, it may not be in the class of the *Mary Celeste*. Nevertheless, the fate of the *Felicity Ace* is furrowing the brows of marine accident investigators.

In February last year, the 200-metre cargo ship embarked from Emden, Germany, and headed for Rhode Island, US, with nearly 4,000 cars on board, including Audis, Bentleys, Lamborghinis and Porsches, as well as a sizeable contingent of electric cars. She was around 320km south of the Azores when the cargo section caught fire.

All 22 crew abandoned ship and were rescued, but the vessel drifted ablaze for about a week before a salvage team was able to board and connect her to a tug. Despite this, the *Felicity Ace* capsized and sank on 1 March with an estimated cargo loss of up to $400m (£315.4m). That is without considering the collateral damage of the 2,000 tons each of oil and fuel she was carrying.

The shipping forecast

The *Felicity Ace* was one of 38 ships to sink last year, according to Allianz Global Corporate and Specialty (AGCS), a major business insurer. But her fate highlights growing concerns for shipping companies and supply chain managers about an emerging risk from the global drive towards decarbonisation.

GETTY

According to AGCS, there were 209 fires reported on major ships in 2022. This is the highest number for a decade, up 17% year-on-year. Fire and explosions are also the most expensive incidents, accounting for 18% of the value of insurance claims in the marine industry and totalling around €1.65bn (£1.41bn).

Electric vehicles (EVs) and battery-powered goods are a relatively new type of cargo. Indeed, the burgeoning battery market is expected to grow by more than 30% annually over the next decade. Most EV makers rely on lithium-ion (Li-ion) batteries, which are potentially highly flammable and in danger of 'thermal runaway' – a phenomenon which independent safety science organisation UL Research Institutes describes as "an uncontrollable self-heating state". AGCS warns they pose an increasing risk for container shipping and car carriers.

"Li-ion batteries can store up to four times more energy per unit of mass than other batteries, with potential fire or explosion risks increasing as the amount of energy stored by the battery increases," says John Gow, a marine fire and explosions investigator who is technical director at fire protection engineering firm Jensen Hughes. "Large-format Li-ion batteries, such as those used in EVs, may tend to catch fire more quickly than smaller, encased Li-ion batteries used in smartphones, laptops and power tools.

"Common causes of Li-ion battery fires may be related to internal manufacturing defects, physical damage or substandard quality, internal electrical failure such as overcharge, over-discharge and short circuits, and thermal runaway issues.

"Li-ion battery fires can also be more difficult to manage and extinguish than normal fires. Li-ion battery fires are intense, can produce a significant amount of toxic gases – usually early in the failure – and have the potential to reignite hours, days or weeks later.

"Typically, a ship's firefighting capabilities and fire protection and detection systems are not designed to deal with Li-ion fires. Once a fire takes hold, it can easily get out of control, spreading beyond the ability of the crew or fire protection systems to manage."

> "Typically, a ship's ... fire protection and detection systems are not designed to deal with Li-ion fires"

Battling the blazes

CED Technologies, which specialises in forensic engineering, says firefighters are struggling to keep up with the rate at which the EV industry is changing. Moreover, different tactics are required to combat these blazes. For example, Li-ion battery cells are contained in steel cases to protect them and help maintain their temperature. But in the event of fire, this also causes them to be harder to put out, forcing firefighters to place extinguishing agents underneath the battery.

It adds that "so far the jury is out" on whether EV Li-ion batteries led to the sinking of the *Felicity Ace*. "A full investigation would need to be completed and the evidence is unfortunately residing at a depth of more than 30,000ft on the bottom of the Atlantic Ocean," the company says.

HUW MORRIS is a freelance journalist

SHIPPING'S ROLE IN THE WORLD ECONOMY

The maritime industry is a powerful but overlooked player in the global economy. The Organisation for Economic Co-operation and Development (OECD) says ships transport around 90% of the world's goods. Around 60% of that – including virtually all imported fruits, gadgets and appliances – are packed into large steel containers, according to the World Economic Forum. The rest is mainly commodities such as oil or grains poured directly into the hull. Maritime trade volumes are expected to triple by 2050, according to the OECD.

The average size of a container ship has doubled in the past two decades, with the largest vessels now behemoths and capable of hauling 24,000 containers. That's a carrying capacity equivalent to a 44-mile-long freight train, according to leading international owner Costamare.

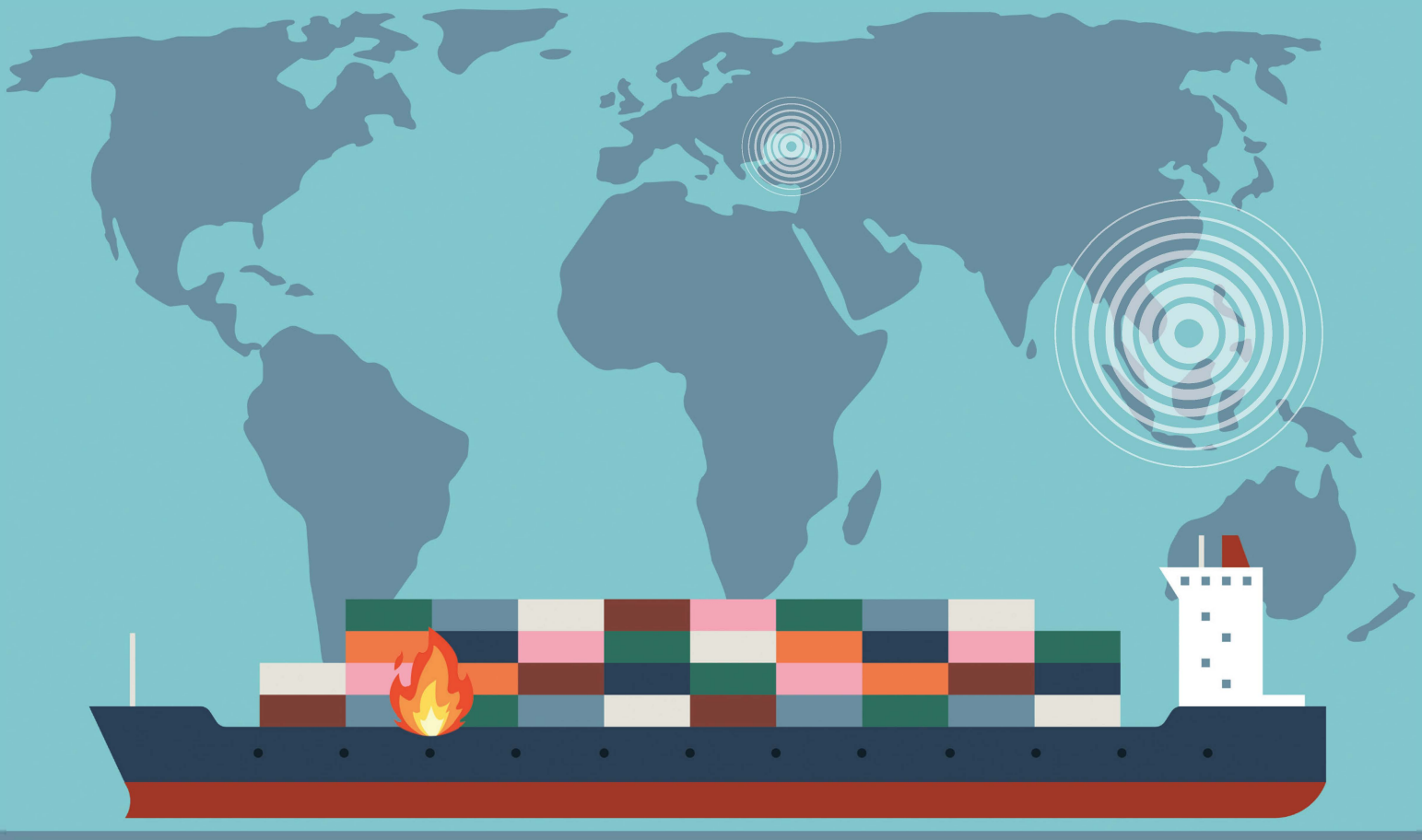
The combined value of the global merchant fleet increased 26% to $1.2trn (£0.95trn) in 2021 while the average value of container shipments has also risen, with more high-value goods such as electronics and pharmaceuticals. AGCS says "it is not unusual" to see one container valued at $50m (£39.4m) or more for high-value pharmaceuticals.

HOW SHIPPING GIANTS ARE RESPONDING TO FIRES AT SEA

More than 70 fires ignited on board container ships in the past five years, according to AGCS, with car carriers transporting electric vehicles using Li-ion batteries the main headache.

In a major new initiative, Evergreen Line of Taiwan, South Korea's HMM, Denmark's Maersk, Germany's Offen Group, Singapore's Ocean Network Express, Hong Kong's Seaspan as well as UK certifier Lloyd's Register are backing extensive investigations into how cargo is loaded, secured and monitored at sea as well as faster technology for detecting fires onboard and extinguishing them quickly.

"The main root cause for cargo fires on container ships is the integrity of dangerous goods throughout the supply chain," says Maersk's head of marine standards, Aslak Ross. "It is a problem that can only be improved through industry-wide solutions and we are a strong believer in sharing learning across the industry to improve safety."



GETTY

GLOBAL SHIPPING LOSSES IN 2022

Every year, AGCS analyses reported shipping losses and casualties – known as incidents – involving ships of more than 100 gross tons. Sunk or submerged ships were the main cause of loss, followed by fire and explosions, with vessel collisions coming third.

A total of 38 ships were lost in 2022, compared with 59 the year before. This is a 65% decline in annual losses over 10 years. Even 30 years ago, the global fleet was losing more than 200 vessels annually.

South China, Indochina, Indonesia and the Philippines maritime region is the global hotspot, accounting for one in five losses in 2022, and totalling 204 in the past decade. High levels of trade, congested ports, older fleets and extreme weather are the main causes for losses in the region.

According to AGCS' global head of marine risk, Rahul Khanna, shipping losses are at their lowest in the 12 years that AGCS has been studying the issue. Improvements in safety programmes, training, changes in ship design and regulation are working, he says, but there are "several clouds on the horizon". Li-ion batteries are not the only disruptive factor causing waves.

Some 18 months after Russia's invasion of Ukraine, the ripple effects for shipping continue to be felt. The threat of collateral damage on civilian shipping in or around the war risk area remains high, particularly from floating mines. Oil sanctions have also resulted in Russia and its allies creating a 'shadow' tanker fleet to transport and sell its oil. Estimates of its size vary but the figure could be as high as 600 vessels.

"The shadow fleet is more likely to be made up of older ships, operating under flags of convenience with lower maintenance standards," says AGCS' global product leader of marine hull, Justus Heinrich. "The increase in their number is a worrying development, threatening the world fleet and the environment. A major incident can cause loss of life as well as uninsured damage or pollution." Indeed, last May, an uninsured, unladen 1997-built tanker, *Pablo*, exploded in South-East Asia, reportedly killing crew.

Industry reporting systems attribute around 25% of serious incidents onboard container ships to misdeclared dangerous goods, such as chemicals, batteries and charcoal, although many believe this number to be higher.

"Failure to properly declare, document and pack hazardous cargo can contribute to blazes or hamper firefighting efforts," says Khanna. "Labelling a cargo as dangerous is more expensive. Therefore, some companies try to circumvent this by labelling fireworks as toys or Li-ion batteries as computer parts, for example."

Several large container shipping companies have turned to technology by using cargo-screening software to detect suspicious bookings and cargo details, while large container operators are imposing penalties. However, Khanna calls for unified requirements and penalties for misdeclared hazardous cargo as a crucial step in tackling the issue.

Amber Rochette GradIEMA

Sustainability consultant at Sustainit, currently working towards PIEMA

Why did you become an environment/sustainability professional?
I grew up in the countryside and have always loved the natural world.

What was your first job in this field?
Communications and partnerships manager for a Bristol-based community interest group (CIC), which set up the UK's first sustainable fashion week. It involved lots of campaigning for a more equitable fashion industry. This showed me how climate change and social justice are inextricably linked.

How did you get your first role?
I started volunteering as a student and that progressed into employment.

What does your current role involve?
I help clients understand their impact on the planet, people or economy, and how they can reduce negative impacts and increase positive impacts. I also work closely with our comms team on specific knowledge-sharing campaigns.

How has your role changed/progressed over the past few years?
My first job was heavily focused on community engagement, making more sustainable choices and igniting behaviour change from the ground up. Now it involves supporting businesses of all shapes and sizes across a range of sectors. The main change is moving from B2C to B2B engagement.

What's the best part of your work?
No project or client is the same! I like learning from each one and finding new challenges to overcome.

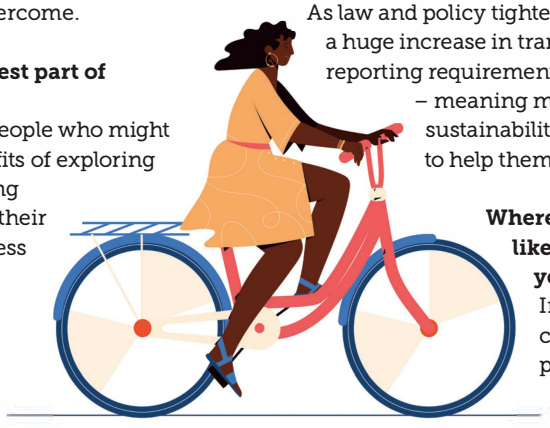
What's the hardest part of your job?
Engaging with people who might not see the benefits of exploring and implementing sustainability in their long-term business strategy. We use accurate data to help drive sustainability throughout businesses, so we can let the numbers talk for themselves.

What was the last development event you attended?
The Sustainable Apparel and Textiles Conference held by the Innovation Forum in Amsterdam in April 2023.

What did you bring back to your job?
A deeper understanding of the practical limitations and challenges faced by brands/suppliers when calculating scope 3 emissions. It also sparked ideas to help diversify considerations and approaches to the triple bottom line in this industry.

What is/are the most important skill(s) for your job?
Being a good communicator. Even with all the knowledge in the world, without the right communication skills this job would be difficult.

Where do you see the profession going?
As law and policy tightens, there will be a huge increase in transparency and reporting requirements for businesses – meaning more reliance on sustainability professionals to help them get things right.



SHUTTERSTOCK

Where would you like to be in five years' time?
In a role that continues to provide learning and development opportunities. And supporting more SMEs to understand their impact and work with them to future-proof their business strategies.

What advice would you give to someone entering the profession?
Get some volunteering experience. The NGO/CIC landscape plays a huge role in sustainable development, and the skills learned will be applicable wherever you end up. And it's a great way to grow your network and find career opportunities.

How do you use the IEMA Skills Map?
As a tool to help me plan for future progression and build my experience.

If you had to describe yourself in three words, what would they be?
Friendly, calm and motivated.

What motivates you?
Disrupting the status quo. Change can be hard, especially if you're not sure what it leads to.

What would be your personal motto?
Take things one step at a time.

Greatest risk you have ever taken?
Studying for a master's and working full time while volunteering. It was an intense year but I'm glad I put in the groundwork, and the time flew by.

If you could go back in history, who would you like to meet?
US Supreme Court judge William Orville Douglas. His dissenting opinion in the *Sierra Club v Morton* case in 1972 ignited the environmental legal rights movement. He said that natural resources ought to have rights to sue for their own protection. In his own words: "The river as plaintiff speaks for the ecological unit of life that is part of it."

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