

TRANSFORM

Environment ●
Economy ●
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FOR ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS

July/August 2020
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Can circular economy principles be applied to the water industry?

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PLUS

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

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SARAH MUKHERJEE, CEO, IEMA

Ringling the changes

It's my tremendous pleasure to welcome you to this edition of *Transform*, my first as CEO of IEMA. It has been both an interesting and unusual career transition, very much in keeping with the times. Instead of the usual choreography of an office move – new location, face-to-face meetings with the new team, networking over lunch – the 'office' is the same kitchen table I was sitting at in my last job. However, while my physical location may not have changed, I have very quickly felt part of the IEMA family and am delighted and honoured to be leading such a fantastic, passionate team.

Like many organisations, IEMA has moved entirely to virtual working. As lockdown begins to ease, we are now considering what a safe return to work might look like. Many of the team have found working from home a productive and rewarding experience. Combined with the reduction in the carbon involved, we are thinking hard about how we can work more flexibly in the future. This is also something that Iain Gulland from Zero Waste Scotland has considered, as you can read in our main interview this month – with some interesting insights.

The unusually sunny weather here in the UK has been a blessed relief for those of us lucky enough to have a garden or open space nearby. However, the lack of rain highlights the vulnerability of water delivery systems, not just in the UK and Europe, but also around the world. As our expert authors point out, demand for water is soon expected to outstrip supply; they consider whether a combination of technology and collaboration can help develop water's circular economy.

While summer is traditionally a time for travel and relaxation, we know that there will be members for whom the next few months might bring further worry and uncertainty. We are working with you to find new ways of supporting you on your professional journey. I would be delighted to hear from members; please do drop me a line with any thoughts and suggestions you may have for future issues, or for the organisation more generally. May I wish you a peaceful, restful and secure summer.

"We know that there will be members for whom the next few months might bring further worry and uncertainty"



ROUNDUP

ENVIRONMENT &
SUSTAINABILITY
NEWS AND VIEWS

ECONOMY

Global leaders pledge to build back better with circular economy

More than 50 policymakers, CEOs and other influential individuals worldwide have highlighted the circular economy as a solution to building back better from the coronavirus pandemic.

In a joint statement, the leaders outlined how they are “more committed than ever” to transitioning to a circular economy, extracting value from plastics, fashion, food and finance in a way that combines economic opportunity with wider societal and environmental benefits. The CEOs of Nestlé and Unilever are among the signatories, urging businesses and governments to invest in circular economy initiatives while raising the ambition level of their own targets. This comes as various political, financial and charitable groups lend their support to calls to ‘build back better’ from the coronavirus crisis with low-carbon projects and economic stimulus packages.

“As we rise to the challenges caused by the coronavirus pandemic, the question is no longer should we build back better, but how,” the statement



reads. “The circular economy offers a solution for how to do so.

“By designing out waste, keeping products and materials in use, and regenerating natural systems, it creates vital opportunities for economic growth that also restore the environment, create jobs, and benefit society.”

Convened by the Ellen MacArthur Foundation, the signatories have pledged to eliminate all plastic they don’t need, innovate towards new business models and materials, and keep the plastic they do use in the

economy and out of the environment.

For fashion, the leaders said they would ensure clothes are used more, are made to be made again, and are produced from safe and renewable materials.

They also committed to redesign food products and supply chains in order to regenerate nature, eliminate waste and connect local production and consumption, and to support financial

companies that transition to circular business models.

“And we will not stop there,” the statement says. “We can do the same for other industries that have vital roles to play in this recovery, including healthcare, technology, mobility, electronics, chemicals, and the built environment.

“We call on more businesses, governments, and financial institutions around the world to join us on the journey towards a circular economy, to invest in circular economy solutions, and to raise the ambition level of circular economy targets, while delivering faster against existing ones.”

Read the statement in full at bit.ly/3hqZnfQ



EQUALITY

Women rising to the top of UK energy sector

Women occupy significantly more board seats at top UK energy companies than they did last year, analysis by PwC and the POWERful Women initiative shows.

Their latest 'state of the nation report' shows that women now account for 21% of board seats in the energy sector – a noticeable increase from the 16% recorded in 2019 and the 13% in 2018. The number of executive board seats occupied by women has more than doubled from 6% to 13%, while 11 of the 80 companies studied have already met POWERful Women's 2030 target of 30%. In total, there are 25 more female board members since the last review in 2019, and the number of female executive directors has increased by two-thirds.

However, 38% of the UK's top energy companies have no women on their boards, although this is better than the 42% recorded last year. The findings also show that 79% have no female representation among their executive board seats, down from 89% in 2019. A recent study by McKinsey & Company found that firms in the top quartile for gender diversity on executive teams are 25% more likely to have above-average profitability than those in the bottom quartile.

"This year we have seen the most progress since we started compiling board statistics five years ago," said POWERful Women chair Ruth Cairnie. "The increase in the number of women in executive director positions is particularly noteworthy. Nonetheless, there is a long, long way to go before the representation of women at senior levels is sufficient or sustainable."

CLIMATE CHANGE

Multiple weather records broken

The UK has experienced multiple record-breaking weather events this year, as the climate crisis continues.

Met Office statistics show that May was England's driest calendar month since 1896, with less than 10mm of rainfall on average, while all UK countries experienced their sunniest spring in nearly 100 years. February 2020 was the wettest February the UK has ever registered, and the winter as a whole was the fifth wettest since records began in 1862. Storms left thousands of homes underwater.

"Climate breakdown can only mean more extreme swings," said Friends of the Earth nature campaigner Guy Shrubsole. "As lockdown lightens, decision-

makers need to see both crises, climate and virus, as having the same solution: invest in a green and fair recovery."

YouGov polling found that 81% of UK citizens believe coronavirus has highlighted the importance of protecting and restoring nature. Three-quarters support the suggestion that nature could contribute to economic recovery, while 80% oppose the idea of the government reducing spending on nature.

The survey also found that people with an annual household income of less than £10,000 are 3.6 times more likely to have no outdoor space where they live than people with a household income of £60,000 or more.



IMAGES: ISTOCK/SHUTTERSTOCK



BUSINESSWATCH



Unilever launches €1bn climate and nature fund

Unilever has launched a €1bn fund to be spent during the next 10 years on projects such as landscape restoration, reforestation, carbon sequestration, wildlife protection and water preservation. The consumer goods giant also announced its intention to achieve net-zero emissions across all its products by 2039.

"Climate change, nature degradation, biodiversity decline, water scarcity – all these issues are interconnected, and we must address them all simultaneously," said Unilever CEO Alan Jope.

bit.ly/30EUcD8

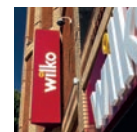


Jet Zero Council unveiled

The UK government is developing a coalition of businesses, trade bodies, ministers and environmental groups to align the aviation sector with net-zero emissions by 2050. Within a generation, the Jet Zero Council aims to demonstrate flight across the Atlantic without harming the environment.

"This advisory body will help ensure government and industry work in partnership to make net-zero carbon emissions for the aviation industry a reality," said Karen Dee, chief executive of the Airport Operators Association.

bit.ly/3fvRAvz



Wilko signs UK Plastics Pact

After signing the UK Plastics Pact, homes and garden retailer Wilko has agreed to a roster of measures focused on reducing its use of single-use plastic.

The initiative, managed by environmental non-profit WRAP, commits signatories to four key targets, such as ensuring 100% of their plastic packaging is reusable, recyclable or compostable by 2025.

"Through our first-of-a-kind pact we are working together with governments, citizens and business to transform the way we make, use and dispose of plastic so that we retain its value, but prevent it from polluting the environment," said WRAP CEO Marcus Gover.

bit.ly/3d3dxR4



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IEMA FELLOWS

New publications

Disruptive tech

In 2019, 20 IEMA Fellows met as the IEMA Fellows Working Group on Disruptive Technologies and the Digital Economy. In December 2019 it published the *Disruptive Technologies and Sustainability* thought piece, which gives insight into impact of disruptive technologies on society, the economy and the environment, and sets out key challenges for businesses in transitioning to a sustainable digital economy. It also suggests what members can do within their organisations to begin the transition. Throughout 2020 the group will collaborate with the Climate Change and Energy Network to develop a second publication. If you are a member of this network and wish to support this work, please contact m.jourdan@iema.net

Collaboration

Beyond the Perfect Storm (2016) confirmed that a list of 'core ingredients' is needed in transforming to sustainability, including leadership, collaboration, innovation, systems thinking and a long-term view. IEMA's engagement with the Fellows Network has sought to gather insight into collaboration and sustainability leadership. A working group of Fellows with expertise and insight on corporate sustainability will meet throughout 2020 to structure member perspectives as part of an insight briefing that will showcase examples of successful collaborations, and provide a road map for others to use to help resolve sustainability dilemmas faced by organisations.



WEBINAR

#BuildingBackBetter – but how do we contribute?

Absent from our collective narrative in January, the concept of 'Building Back Better' (BBB) after COVID-19 has well and truly arrived. An increasingly accepted vision, BBB has attracted support from prime minister Boris Johnson to Prince Charles and the World Economic Forum's 'Great Reset Project'. Historic quotes are everywhere, and apparently we must 'never let a crisis go to waste'. Where do we, as professionals, fit in?

In April we all picked up on the theme, with some even talking of a possible 'Bretton Woods moment'. Do we have world leaders who could seize the moment and rebuild our global economic system? By the time this is published, we may know the answer.

Whatever our political leaders do, there will need to be an economic reboot, with businesses evolving and adapting. As a profession, we have the knowledge and at least some of the tools to champion a socially just and green economic resurgence. IEMA has made a start; we have vacated our Lincoln headquarters, and the team is embracing the challenge of running a 15,000-plus membership body from our homes.

In May we held our first BBB webinar, and Mike Barry, former M&S director of sustainable business, ran through his personal perspectives for change. Pre-COVID-19, Mike had already identified that a new business cycle (2020-30) is rapidly emerging – one that many incumbent businesses

will struggle to survive in. Running through a vision of critical change elements, Mike turned his attention to our role as professionals. Away from our own specialisms, we all need to know how business itself ticks, to build our networks, collaborate, listen, mentor and be mentored.

It was heartening to see a clear synergy between these sustainability skills and IEMA's own professional standards. However, the challenge continues, and additional perspective is offered by Phil Cumming, FIEMA, global head of sustainability at Walgreens Boots Alliance – Global Brands: "Sustainable business challenges are now deeply complex and require a systemic mindset, beyond just an environmental framing. Now more than ever, it's imperative that our actions must take into account social and economic dynamics if they are to succeed. Sustainability is fast becoming a cultural shift that will affect us all in the coming years. As a profession, we can help continue the conversation and positive impact by ensuring our sustainability goals remain intact".

Mike Barry was joined by IEMA Fellows Sarah Handley, Dan Hamza-Goodacre and Nick Blyth. Their webinar (22 May) can be viewed at 'Watch Again' on iema.net Watch out for more sessions under the #BuildingBackBetter theme.





NICK BLYTH

IEMA policy lead

Climate Change Network support sessions

During the COVID-19 pandemic, the Climate Change and Energy Network has helped IEMA to deliver a series of support sessions, assisting members with 'wicked' challenges and confusing practice dilemmas. These are available on the IEMA 'Watch Again' pages, with topics ranging from addressing climate change through environmental management systems or environmental impact assessments, to communicating effectively. We also helped develop new guidance for professionals on developments such as the Task Force on Climate-related Financial Disclosures.

One of the network's initiatives is the *Climate Change and Energy* toolbox, which includes more than 50 entries, plus direct advice from professionals. We encourage members to use the guide, available in the IEMA Reading Room. Your feedback will help us to continually improve it.

We have also supported 'Pledge to Net Zero', an initiative to promote and showcase transition leadership. This is an opportunity for the sector to 'walk the talk' and drive emission reductions in our business models.

The network steering group is entering a new phase as we look towards COP26 and the post-COVID-19 world. What will the future economy hold for climate action, and can we embed any learning points from the adaptations we have had to make?

If you feel you can make a contribution to the network's programme or steering group, write to us at climate@iema.net

STANDARDS

New ISO standard unveiled

The International Organization for Standardization (ISO) has developed a new standard, *ISO 14016 – Guidelines on the assurance of environmental reports*. The new standard can be applied to standalone environmental reports, or to the non-financial environmental information in an organisation's annual report or sustainability report.

While environmental (and sustainability) reporting is far from a new practice – it is in fact a rapidly growing element of a more sustainable world – confidence in the content of these reports has often lagged behind. Reporting on performance is one step towards environmental performance transparency, but without credible assurance of the processes behind a

report, and the data within it, the end user is less able to rely on it.

ISO 14016 provides long overdue guidance on assurance for reporting organisations and those providing that assurance, and informs those who rely on reports. It addresses a wide range of assurance issues, including: the principles of assurance; planning and performing the assurance engagement; levels of assurance; the assurance statement and reporting; and competence. The guidelines can be applied to the assurance of environmental reports prepared in accordance with recognised standards and protocols for reporting.

ISO 14016 was published on 15 June 2020.

LEGAL

High Court supports EIA

In *R (Swire) v Secretary of State for Housing, Communities and Local Government* [2020] EWHC 1298 (Admin), the High Court has quashed a planning permission and held that the Secretary of State unlawfully decided permission could be granted without an environmental impact assessment (EIA) first being undertaken.

The Court held that it was unlawful to assume that effective remediation works could be worked out in the course of the development. It was also held that there was a lack of expert evidence and risk assessment on the nature of any BSE-related contamination at the site, and that the measures which might be required to remediate any such contamination and hazards had not been identified.

It remains good law that proposals for mitigation or remediation measures can



be taken into account when determining whether EIA is required. However, those mitigation and remediation measures need to be properly considered and parties must ensure that sufficient evidence is provided to support any conclusion that there will not be likely significant effects at the screening stage. If there is doubt as to whether a project will have likely significant effects in the EIA context, the precautionary principle should be applied. For the full report, see bit.ly/2UWY7az

NEW REGULATIONS

THE LATEST

■ LEGISLATION ■ GUIDANCE ■ CONSULTATION



20 MAY 2020

Biodiversity

The European Commission has adopted two new strategies that aim to halt biodiversity loss and transform our food systems. *The EU Biodiversity Strategy for 2030* and *A Farm to Fork Strategy* are in line with the European Green Deal and seek to bring together nature, farmers, business and consumers to work towards a sustainable future.

➔ cedr.ec/6yw



1 JULY 2020

Dangerous substances

The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) (Amendment) Regulations 2020 amends existing legislation to reflect the new EU requirement to remove all equipment containing more than 0.005% PCBs or PCB volumes greater than 0.05dm³ by 31 December 2025.

➔ cedr.ec/6yv



20 MAY 2020

Recycling

The Deposit and Return Scheme for Scotland Regulations 2020 aim to promote and secure an increase in recycling by making sure targeted materials are collected in larger quantities and separately to other materials. This will be enforced through the Environmental Regulation (Enforcement Measures) (Scotland) Amendment Order 2020.

➔ cedr.ec/6yu



26 MAY 2020

Ecodesign

The Ecodesign for Energy-Related Products (Amendment) Regulations 2020 makes various amendments so the UK Market Surveillance Authority can enforce the new ecodesign requirements for external power supplies in the UK.

➔ cedr.ec/6z1



7 MAY 2020

Air pollution

The *Air Pollution in Northern Ireland 2018* report from DAERA aims to provide user-friendly information on local air quality monitoring. It contains the key results of that monitoring from throughout the region during 2018.

➔ cedr.ec/6yx



19 MAY 2020

Energy efficiency

The Ministry of Housing, Communities and Local Government is consulting on proposals to amend the existing Energy Performance of Buildings (England and Wales) Regulations 2012 for domestic and non-domestic buildings, which will contribute to improving the energy efficiency and reducing the carbon emissions of buildings.

➔ cedr.ec/6yy



29 APRIL 2020

Transport

The Department for Transport is seeking views on the three areas of the Future of Transport Regulatory Review to address outdated areas of regulation. These include micromobility vehicles, flexible bus services and mobility as a service.

➔ cedr.ec/6yz



5 MAY 2020

Water pollution

Natural Resources Wales has reviewed the guidance on assessing the impact of ammonia and nitrogen from agricultural developments, and is now seeking views on its proposed changes to that guidance.

➔ cedr.ec/6z0

➤ An illegal waste site in Lincolnshire was found to have large piles of burning waste on it, causing a significant impact on local residents

Legal

INCOURT



IN COURT

Arrests on illegally operated waste site in Lincolnshire

Officers from the Environment Agency and Lincolnshire police have raided an illegal waste site in Long Bennington, Lincolnshire, and arrested two people.

The Environment Agency had received intelligence that lorries of waste were being accepted on the site and burned illegally. The site, which covered an area the size of a football pitch, had large piles of burning waste on it, including plastic waste, commercial waste and household furniture. Smoke

from the burning waste was causing a significant impact on local residents as well as posing a risk to the environment.

Agency officers noticed that despite lockdown, activity at the site had intensified in recent weeks, and decided to take action. The site had already been investigated for illegal waste activity, with officers visiting the site in January. The recent raid saw two arrests, seizures of a lorry and excavator, legal notices issued and all entrances to the site blocked off, so activity on the site has ceased.

Norman Robinson, area director for the Environment Agency, commented: "Deliberately stockpiling and burning waste that should be safely disposed of is dangerous enough, but doing so in the current situation while people and legitimate businesses are so restricted shows a shocking disregard for our communities, society and the environment. This should serve as a warning to those who would flout not just the law, but the lockdown – we and our partners are still fighting to put a stop to waste crime and we won't hesitate to take action."

Investigations will continue, and work will begin to remove waste from the site. If further legal action follows, those responsible will be facing the potential of extensive fines and even prison.

CASE LAW

Application for review of decision to grant power station permission refused

In the case *R (Clientearth) v Secretary of State for Business, Energy and Industrial Strategy*, the claimant applied for judicial review of the Secretary's decision to uphold the development consent order for Drax Power Station.

There was an application for permission to build and operate two gas-fired generating units (Drax Power Station), as identified in the *Overarching National Policy Statement for Energy (EN-1)*. The development would be a nationally significant infrastructure project (NSIP), so a panel was appointed as an examining authority.

After the panel completed its examination, the developers submitted a letter relating to the UK's net-zero emissions target. The panel recommended that consent should be withheld: the developers' environmental statement indicated too low a baseline for the assessment of future emissions, and this would

lead to a greater increase in greenhouse gas (GHG) emissions than estimated.

The panel said *EN-1* distinguished between the need for energy NSIPs generally and the need for any particular proposed development. The Secretary did not dispute that the development would have impacts from GHG emissions, but the national need outweighed those impacts.

ClientEarth argued that the impacts did not outweigh the benefits when assessed considering either *EN-1* or the balancing of benefits stipulated under the Planning Act 2008. It argued that the Secretary had misinterpreted *EN-1* in her assessment of 'need', and claimed she had unfairly taken account of the developer's late submission.

The judge considered each claimant's grounds for review, and ruled that in assessing the need for the project, the panel

wrongly benchmarked against energy and emissions projections; this did not form the basis of *EN-1* policy. *EN-1* stated there was a qualitative need for new development (such as the Drax Power Station) and substantial weight should be given to the contribution such a project made to that need. Therefore, the Secretary was entitled to dismiss the panel's interpretation.

On the matter of emissions, the judge ruled the Secretary had accepted the panel's findings that the project would have environmental impacts, but disagreed with the panel's evaluation of the project's benefits. She also considered the project's contribution to meeting policy need and correctly weighed the benefits, finding the impact of GHG emissions did not carry determinative weight overall.

The judge considered the Secretary's obligation to weigh

the development's adverse impacts against its benefits. *EN-1* does not say emissions are not to be considered in the process, or prescribe how much weight to give to emissions in a decision. The Secretary had found no compelling reason to give greater weight to the GHG emissions; the judge agreed this was a matter for her judgment.

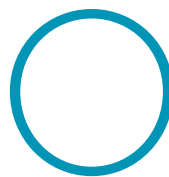
The judge also considered the Secretary's decision to give regard to the developer's late submission, finding that it was a letter to officials and had not been provided to the Secretary herself. They ruled that the advice officials provided was not influenced by the letter, and there was no reference to it in her decision. Therefore, the claimant's application for judicial review was refused.





DISTANCE LEARNING

David Burrows speaks to **Iain Gulland** about Zero Waste Scotland's progress on carbon emissions, on the day its home working report was released



numbers and discovered that with no commuting or corporate travel, and after accounting for one-off investments in home office equipment, ZWS's emissions had fallen by 25% in the first two weeks of lockdown compared to the previous

On March 16, Zero Waste Scotland (ZWS) began home working in response to COVID-19. Its environmental analysts crunched the

period last year. If home working continued after lockdown, the average daily emissions for its 150-or-so staff would drop by 73% compared to business-as-usual. This is an enticing proposition for an organisation created to "show leadership" on everything from carbon emissions to the circular economy. It was a bit of a "wow" moment, admits Iain Gulland, chief executive of ZWS, on the day the data was released.

If home working continued after lockdown, the average daily emissions for Zero Waste Scotland's 150-or-so staff would drop by 73%



was part of the Waste and Resources Action Programme (Wrap), with Gulland director of Scotland, but it was spun off in 2014. Unlike its English sister organisation, which became a charity, is fully funded by the Scottish Government and the European Regional Development Fund. Its role has also changed – from a delivery body for policies the government had already (to some extent) designed, to policy influencer and, in Gulland's words, "thought leader". It was ZWS, for example, that delivered the business case and consultation that paved the way for a deposit return scheme (DRS) for drinks containers.

The DRS has taken a long road, but in May the Scottish Parliament voted in favour of the scheme; consumers buying a drink in a single-use container will pay a 20p deposit, which is then refunded when the bottle or can is returned for recycling. ZWS reckons 90% of the containers included in the DRS (covering PET plastic, metal and glass) will be captured for recycling across 17,000 return points nationwide. Some 4m tonnes of CO₂e will be saved over 25 years.

The approach has its critics, though, and in March, Scotland's environment secretary Roseanna Cunningham announced that the 'go-live' date had been pushed back to help businesses prepare their premises. This would also provide "flexibility in the immediate term as the whole country prepares to deal with COVID-19", according to Cunningham. With Scotland already having delayed its 2021 ban on landfilling biodegradable municipal waste until 2025, the postponement of another flagship environmental policy seemed politically unpalatable. However, a new date of July 2022, rather than April 2021, will still put it ahead of England's 2023 target (though there are arguments for starting schemes across the

Deloitte experts think the pandemic has brought about a "five-year acceleration" of the remote working trend. Some may jump at the chance to avoid the commute – according to the TUC, 59 minutes for the average UK worker – beyond the lockdown. Others will be keen to re-establish relationships with colleagues (and, in some cases, craving social distance from their family). This is why Gulland is careful not to get carried away. "I say to my staff – and I am very clear about this – that this period is not 'working from home'; this is 'at home in a pandemic, trying to work'."

Humans are, of course, social by nature, and little is known about the impact of remote working on mental and physical wellbeing, morale and

productivity. We also need better understanding of our ability to network or collaborate effectively (what Gulland calls "meetings in the margins") when we are not in the same room. "It's been difficult, but we seem to be coping quite well," Gulland says. I sense that he is, like many chief executives, weighing up the pros and cons of this huge enforced working pattern project. Motivating staff remotely is more challenging, he admits, but "it has made me think about what our future looks like in terms of operations."

Thought leadership

ZWS's remit is to lead Scotland to use products and resources responsibly, focusing on the biggest impacts in relation to climate change. Initially, it

Interview

nations simultaneously, for example to avoid cross-border fraud).

In the circumstances, Gulland feels the decision was “only right”. But is he worried that politicians will use the pandemic to pull back other policies, rather than push them on? Take plastic – a material that a few months ago was a sinner, but is now billed in some quarters as a saviour. The UK government has delayed its ban on plastic straws, stirrers and cotton buds “given the huge challenges posed to businesses by coronavirus”. Ministers waved away claims that plastic industry lobbying had forced them to act, but COVID-19 has been manna from heaven for pro-plastics groups: the perfect vector for spreading the story that single-use is more hygienic.

To Gulland that's all it is – a story. If studies are needed, ZWS is ready to do them, but Gulland's team is yet to see anything that would suggest single-use is safer than reusables in relation to COVID-19 spread. “Where is the evidence?” he asks. “There is a perception, and you could argue that's what has been created.”

Could this undo some of the work done during the past two years to reduce single-use packaging and recycle more of what's left? “We have to be careful,” says Gulland – but he certainly doesn't feel the issue will fall by the wayside, even for sectors that have been hardest hit by the pandemic, such as hospitality. He argues that, rather than showing we need more single-use, this crisis has demonstrated how better management of resources could make us more resilient.

“I don't want to use COVID-19 and opportunity in the same sentence, but look at the NHS,” he explains. “We have been working with it for two years on the opportunities for circular economy thinking. Personal protective equipment (PPE) and hand sanitisers have become critical materials. We are seeing what happens when you have a finite resource – and that's what the earth is facing.” Gulland's passion shines through as he talks about refillable hand sanitisers and using “repurposed plastic” in PPE. He

▶ Iain Gulland with Scottish First Minister Nicola Sturgeon at the Circular Economy Hotspot Scotland in 2018



feels that the circular economy was seen as advantageous before COVID-19 but is even more so now. “People will think about supply chains quite differently.”

Responsible consumption

Consumption of products and materials accounts for an estimated 74% of Scotland's carbon footprint. One of the four strategic outcomes in ZWS's corporate plan is “responsible consumption”. The ambition is a nation where “people and businesses demand products and services in ways that respect the limits of our natural resources”. But how do you square that with the go-to economic recovery model of ‘buying more stuff’? Gulland admits that talking about sustainable consumption and building back better does feel a bit like “waxing lyrical”, but he truly believes that change is coming – and that Scotland is well placed to “leap forward”. He talks of the “real determination” among the ministers he works with (Scotland has committed to become a net-zero society by 2045) and doesn't see any sign of that changing.

“PPE and hand sanitisers have become critical materials. We are seeing what happens when you have a finite resource”

Those in the private sector, too, were already showing “huge appetite” to respond to the political targets around climate change and resource use. A circular economy could save businesses in Scotland £3bn per year, according to ZWS research, while circular actions could eradicate up to almost a fifth of the nation's carbon footprint by 2050.

The groundwork that shows what's possible has already been done, says Gulland, citing businesses ZWS has worked with. There are 200 of these businesses and counting, covering everything from upcycled furniture and refurbished computers to palm oil alternatives made from spent coffee grounds. One company has even shifted from selling its light fixtures to leasing them. He suggests that there will be more incentive to innovate now, not less. “I think people will fear disruption less.”

COVID-19 has brought massive disruption across society, but people and businesses are adapting. “I think we genuinely have a coalition of not just the willing, but the acting. It'll be hard for them to go back and say, ‘let's just park that’, as they're already on the journey.” And for Gulland, this is not just about starting again. “We spent a lot of time on our own net-zero plan but following the results from the remote

working research I think we could be more ambitious. I like to think most leaders, businesses and governments think ‘wow’ – that this is not just a chance to build back better but leap forward.”



DAVID BURROWS is a researcher and freelance writer

The Corporate Diaries

"I suspect an awful lot of the environmental agenda and targets will be put on the back burner," said Ryanair's chief executive Michael O'Leary (below right) at an event hosted by the *Financial Times* last month. "I think the much greater political issue is going to be massive unemployment across Europe and massive government indebtedness."

From what I have seen, this thinking represents the exception, not the rule. You can't move for stories about the "green recovery", "building back better" and, a new one for the hospitality sector, "reopening right".

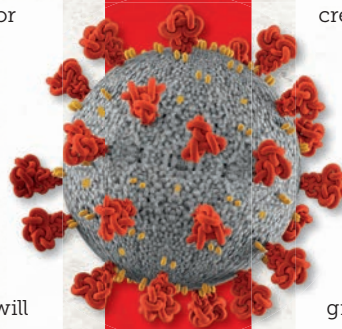
In some countries, government bailouts are being linked to carbon commitments. Air France-KLM, for example, has secured €10bn (£9bn) in emergency coronavirus funding, but in return has to slash 40% of its French domestic flights by next year. In Canada, large businesses that apply for government loans must publish annual climate disclosure reports.

Consultants have noticed a spike in interest related to risks, including climate change and resource scarcity. "It will be quite hard to explain why you are not consulting experts about risks, to make informed decisions," says Peter Skinner, chief operating officer at SLR Consulting.

Forward-thinking companies were already getting to grips with resilience – and there are signs that firms with decent environmental, social and governance (ESG) scores are faring well during the pandemic. But could coronavirus see this spread?

Interest in the Taskforce on Climate-related Financial Disclosures (TCFD) is also up. The TCFD was launched by Mark Carney, former governor of the bank of England, in 2015. Writing in *The Economist* recently, he said: "After the COVID crisis, it's reasonable to expect people to demand improvements in the quality and coverage of social support and medical care, greater attention to be paid to managing tail risks, and more heed to be given to the advice of scientific experts. The great test of whether this new hierarchy of values will prevail is climate change."

Momentum was strong pre-lockdown, but will it be enough? In its *COVID-19 Risks Outlook: a preliminary mapping and its implications* report, the World Economic Forum (WEF) warned of a



"SINGLE-USE PLASTIC HAS HAD A GOOD PANDEMIC"



"vicious cycle" of climate degradation, biodiversity loss and infectious disease outbreaks. The 2030 Sustainable Development Goals could also be in jeopardy. But this is all in the balance.

"On the one hand," the authors wrote,

"calls for a green recovery by a range of leaders, sustainability-focused stimulus packages by large economies, and potential changes in production models and consumer behaviours may support the sustainability agenda. On the other hand,

brown stimulus measures, cuts in sustainability investment, weaker commitments to climate and nature action, and the impact of low oil prices create new risks of stalling progress."

Take oil prices. Waste was a hot topic at January's WEF meeting in Davos, with Nestlé chief executive Mark Schneider promoting a £1.68bn package to accelerate the shift to recycled plastic. Nestlé's website states: "It's cheaper [...] to produce virgin plastics than it is to produce food-grade recycled plastics. Our plastic suppliers need to receive financial assurances to make the leap."

That price gap has since widened further – and single-use plastic has had a good pandemic. Lobbying to delay plastic and packaging policies has intensified, and the 'single-use is safe' message is seeping into the consumer psyche. Whether this is scaremongering or science-based is hotly debated.

But let's keep the (reusable) cup half full. The challenges we face have not changed. Rather than stall progress, we could see it speed up, leaving O'Leary – like the end destination of one of his flights – an outlier. 📌

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Circular economy

While the term 'circular economy' has become widespread in trade and industry, it doesn't usually

focus on our most valuable resource: water. According to the latest estimate, global demand for water will exceed our supplies by 40% in a decade if we take the 'business as usual' route. A circular approach could help us to realise the true value of water resources and avoid the linear 'take-make-dispose' mindset that is plaguing the global water sector.

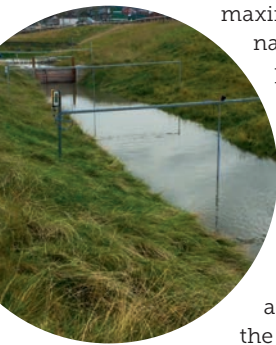
Newcastle University hosted a Global Water Security Symposium in early 2020 to discuss water and the circular economy, attended by industry (P&G, ARUP and HR Wallingford), academia (Leiden University and Newcastle University) and some 50 audience members. This article takes its inspiration from the discussions and views expressed by the panel and audience.

The circular economy principle has historical and philosophical origins. The thinking around feedback loops, biological cycles and systems understanding is ancient and covers various schools of philosophy, from Karl Marx to Kenneth Boulding. Most recently, industrial ecology redefined industrial processes by introducing the idea of a circular flow of materials, in which the by-products of one process are used as an input for another process.

The circular economy concept can be narrowed down to four basic principles: **1. Working with nature.** The key element of a circular concept is to minimise, if not avoid, waste. In doing so, we must maximise our harnessing of nature. Examples are

producing renewable energy or using green (natural) infrastructures instead of grey (concrete) counterparts.

2. Keeping resources in use as much as possible. This can be achieved by maximising the lifetime of our assets



How can circular economy principles be applied to the water industry?
Oliver Heidrich, Majed Khadem and Brett Cherry investigate

STAYING IN THE LOOP

THE LINEAR MODEL

40%

Water demand will exceed supply by 40% in a decade if we take a 'business as usual' approach

⚡ 3%

Household water treatment is blamed for 3% of global electricity consumption

70% 

70% of freshwater resources is used for agriculture

through the frequent maintenance, repair and upgrade of a system's components. Additionally, it would be ideal if we could use digital and online platforms (eg online asset-sharing marketplace for companies) to optimise resource use in a supply chain.

3. Designing out waste externalities.

This is closely tied to the reduction of wastes, and could be done by improving consumption behaviour, minimising energy and resource use, and considering alternatives that yield the same outcome without wasting natural resources.

4. Regenerating natural capital. For instance, we can sell performances, rather than goods (eg leasing instead of buying). We can also assign a higher value to energy and resources that are normally undervalued. We understand that this would require a substantial rewrite of existing business models but, as with cars, it is possible.

A water circular economy creates opportunities for business and environmental sustainability, and boosts profitability. There are many examples of how the circular economy concept could work in the sector.

Working with nature

Green infrastructure is vital to the water circular economy in both urban and rural areas. Green roofs, retention ponds and other green features help to slow, store and filter the water runoff that can lead to flooding.

To find out how green infrastructure can provide water circular economy solutions, it needs to be measured and evaluated, so that its full-scale benefits can be understood. The National Green Infrastructure Facility, part of the UK Collaboratorium for Research in Infrastructure & Cities and based at Newcastle Helix, makes this possible.

The facility has many noteworthy features, such as a unique sustainable drainage system consisting of a swale that holds 600m³ of water captured from nearby residential sites. It is designed to cope with a 1:100-year return interval storm, plus a 30% increase in rainfall,

Circular economy



which allows for climate change. Data generated is freely available at newcastle.urbanobservatory.ac.uk

Keeping resources in use

How can the water sector better manage opportunities and optimise water usage from a water circular economy point of view? The answer is twofold. First, we need to do something to minimise losses in the water sector, especially leakage from piped networks. This can be done via the latest advances in this field. Twenty65, a research consortium in the UK, addressed this by creating leakage-detecting robots that can inspect pipes for damages and signal where they need to be mended.

Second, it is possible to optimise resource usage through digital technologies and platforms that allow such optimisation by providing live monitoring and tracking of water resources. It could be like the smart grid revolution for power systems, which enables the energy network to be managed in real-time and communicate directly with energy consumers.

Designing out waste externalities

A wastewater treatment plant can become an energy provider through, for example, anaerobic digestion or microbial electrolysis for hydrogen production. The former is already widely used by the water sector, and its use is growing; the latter could be used in the future, especially if market demand increases for renewable energy sources such as hydrogen.

IMAGES: ALAMY/ISTOCK

"It is possible to optimise resource usage through digital technologies and platforms"

Circular economy

Wind power to hydrogen – ‘power-to-gas’ – is already cost-competitive by comparison. A steady supply of clean water is necessary to generate hydrogen, meaning the water sector could play a major role; hydrogen is also used for a wide range of industrial purposes, such as manufacturing and steel production.

A range of valuable materials could also be upcycled from wastewater. In some cases, gold and other precious metals are attached to the sludge of municipal wastewater, along with many other useful materials.

Regenerating natural capital

Water is often viewed as a ‘freebie’ from the environment. It can be extracted at little to no cost, unless it is piped and metered. Based on circular economy principles, it should be the other way around – even volumes of water in a small lake should be assigned a value. There are some approaches to doing so. For example, Khadem et. al (2020 – bit.ly/2TqHB1U) developed a method to estimate the economic value of water stored in reservoirs. The method finds



📍 The National Green Infrastructure Facility at Newcastle University examines how green infrastructure can contribute to a water circular economy

Users could also sell the extra allowance back to the water company. This could prompt people to improve their overall consumption behaviour, but would require installing (smart) water meters for every user.

Additionally, the treating of household water alone is blamed for 3% of global electricity consumption. Cap and trade could be a big win in areas where energy use for operating water and sewerage systems is very high – such as California, where 20% of electricity is used to supply water.

resources is used for agriculture.

Thinking about water in a more circular way within a changing environment leads to the energy-water-food nexus, which encompasses a wide variety of public, business and international opportunities for sustainability.

There are many opportunities out there for delivering a truly circular water system – some of which are already being taken, many of which are not. As in other areas of the circular economy, there need to be incentives for reducing water usage, valorising water resources and interfacing with other sectors in smart ways.

It is imperative that circular economy principles are practised for water on a global scale for its numerous opportunities and benefits to be realised. However, there are barriers in our way, many of which are social and political rather than technical.

A better framework for understanding the true value of water may be needed – one that puts people to the forefront of water policies and considers the human right to water as a resource. Through an in-depth holistic understanding of the value of water, a circular economy is more likely to work in practice. 📍

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“The ‘cap and trade’ policies designed to reduce industry carbon dioxide emissions could also be used for water”

the value per unit of water for every reservoir within a system that leads to maximised economic gain from system-wide allocation.

The ‘cap and trade’ policies designed to reduce industry carbon dioxide emissions could also be used for water. With water cap and trade in place, households and businesses that go over their designated allowances would have to buy the extra allowance from the water company at a much higher price than the cost of water below that ‘cap’. If a user has an extra allowance, they could sell it to others who have exceeded the ‘cap’. But they could ‘trade’ at a higher price than the water company charges below the cap, and lower than what the water company charges above the cap.

Policy and technology can work together

Policies and technologies that help to reduce water consumption are urgently required. We also need to be thinking about water as a service by incentivising water conservation rather than exploitation. The ‘50L home challenge’ supported by P&G brings companies, policymakers and communities together. They want to develop and scale innovations for the home that help solve the urban water crisis, considering water access, quality, and innovation in the sector. Accepting that most water is used by food, agriculture and industry, it is a step in the right direction.

What we do in the food sector also has massive implications, as 70% of freshwater

A positive transition

Lucie Skates looks at implementing a proportionate approach to the future of marine advice in Wales

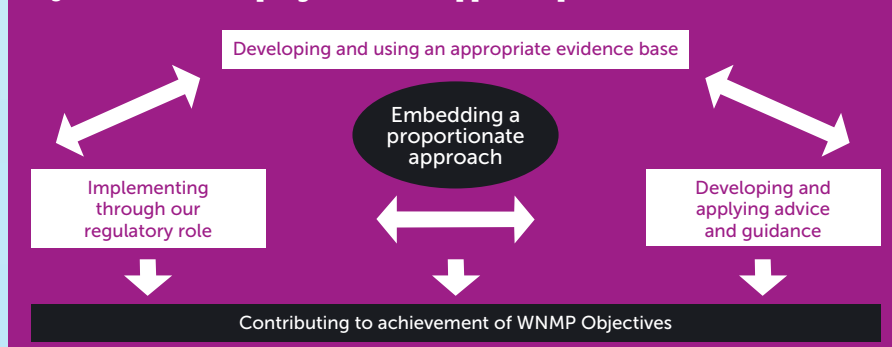
The Welsh National Marine Plan (WNMP) represents the start of a new planning process for shaping Welsh seas to support a range of economic, social and environmental objectives. A key aspect is the focus on proportionality, as the Welsh government wants to deliver sustainable outcomes in a consistent and efficient way that minimises burdens.

As a principal advisor on the environment, Natural Resources Wales (NRW) has been working closely with the Welsh government to provide evidence supporting the development of the WNMP. Now the plan has been adopted, we have a key role in implementing the policies through our regulatory, evidence and advisory work. NRW is improving its ways of working within a new organisational structure, identifying opportunities to improve the management of marine resources under the WNMP planning framework.

We asked IEMA Fellows Josh Fothergill and Dr Rufus Howard to help develop a set of advisory principles to help guide our work by embedding a proportionate approach in our marine planning and development advice.

We face several challenges in applying a proportionate approach when carrying out or advising on impact assessments, or identifying opportunities for restoration or enhancement. Some are longstanding, for instance the high level of uncertainty in the marine environment in terms of distribution of key receptors. Others are more recent – for example balancing new requirements and duties, such as those introduced by the Environment (Wales) Act (2016) and

Figure 1: NRW work programme to support implementation of the WNMP



the Wellbeing of Future Generations Act (2015), with existing legislation.

Although some of these challenges were being partially addressed in existing projects or workstreams, we felt there would be considerable benefits in taking a fresh look at some of the problems and integrating the work under a new theme of “embedding a proportionate approach” with clear objectives and guiding principles.

Proportionality can be tricky to discuss. Telling people that you want to “embed a proportionate approach” in their area of expertise could be seen as implying their advice is disproportionate. It was vital that the principles were developed collaboratively with marine colleagues and that this was as much about articulating the good work we are already doing, along with any potential changes or improvements to our approach.

Having Fothergill, Howard and marine expert Paul Salmon help us organise and facilitate our initial staff workshop was crucial to getting buy-in from colleagues. We outlined our principles and what we wanted to achieve with them, and were

also able to set the wider context by talking through the proportionate EIA strategy.

A recommendations report helped hone our thinking, the final principles were agreed, and we use them when formulating advice and guidance, and as we work to identify opportunities to improve management of marine resources under the planning framework.

The progress we have made during the past 12 months was noted by the Minister for Environment, Energy and Rural Affairs, Lesley Griffiths, who said: “NRW has a pivotal role in supporting the transition to renewable energy. I want to see NRW build on this work to develop a positive approach to both enabling and delivering renewable energy development, on and offshore, in line with the Welsh government planning frameworks, including the marine plan.” ¹

DR LUCIE SKATES is Natural Resource Wales lead specialist advisor on marine plan implementation.

For the extended version of this article with references, go to bit.ly/2YIyzY

Running on empty

Water security is the poor relation of the climate emergency when it comes to industry attention, says **Catherine Early**

Water shortages are life threatening. They are already leading to food insecurity, conflict and migration, and are now aiding the spread of COVID-19 in regions where many lack handwashing facilities. But water is also a business risk. 'Water crises' has been listed as a top five global threat in the World Economic Forum's global risk register every year since 2012. Industry currently withdraws almost 20% of the world's freshwater resources, and this is projected to grow to 24% by 2050, according to the UN's *World Water Development Report 2020*.

Water demand is likely to outstrip supply by 56% by 2030, according to the World Resources Institute (WRI). Decreasing water quality will exacerbate this by limiting the amount that is suitable for use – an estimated 80% of municipal water is discharged without treatment.

Business at risk

Supply chains have already seen the impact. Last year, droughts saw mining company Anglo-American suffer a 28% drop in copper production in Chile; in Chennai, India, large companies had to pay 30% more for water to be trucked to their offices and factories, and the city's Chamber of Commerce said its members were reluctant to invest in expansion due to supply uncertainty.

The Carbon Disclosure Project (CDP) has been asking businesses to disclose their water risk since 2010. In this year's report, 90% of mineral extraction companies reported identifying water risks with potentially substantial impacts. For power generation companies, the figure was 79%; for food, beverage and agriculture companies, 55%; for manufacturing companies, 42%; and for the service sector, 23%. Of those reporting exposure, the combined business value under threat was estimated at US\$188-425bn, though that is likely to be an underestimate given that only half of responders gave

a value. Some 40% of risks were anticipated to hit within one to three years.

A Cinderella issue

In the main, businesses have been slow to act. Companies failing to disclose in 2019 outnumbered those that did, and the number disclosing risks on water is nearly four times lower than the number disclosing climate risks.

Water security is still a 'Cinderella issue' compared with climate change, says Cate Lamb, CDP's global director of water security. She cites lower pressure from institutional investors, and a lack of investor-related campaigns on water.

Emilio Tenuto, senior vice president of sustainability at water and energy technology firm Ecolab, says business awareness is growing. Ecolab is a founding member of the new Water Resilience Coalition under the UN Global Compact (UNGC),

EBBING RESOURCES

20%

Industry currently withdraws almost 20% of the world's freshwater resources

56%

Water demand is likely to outstrip supply by 56% by 2030

44% of companies said they had no plan in place to monitor water use



which aims to build the resilience of water-stressed basins by prioritising those posing the greatest risk.

Signatories must commit to: a net-positive water impact, in which they contribute more to basin health than they take from it, and a water-resilient value chain. The UNGC is working with organisations such as The Nature Conservancy and the WRI to draw up metrics to assess companies' progress, says Mai-Lan Ha, UNGC senior advisor at the CEO Water Mandate initiative.

The time is ripe for launching the coalition in order to raise the profile of the issues and achieve tangible progress, says Ha. The CEO Water Mandate now has 170, but a tipping point in business's understanding of water security has not yet been reached. Businesses really need to work together on water, as it is a problem that very specific to local areas, Ha continues. "Companies can be as efficient as possible and still face significant risk because of the local conditions, so it requires a lot more engagement with external stakeholders in local areas to drive change."

Joining the dots

Another challenge, according to Tenuto, is a disconnect between corporate level, where targets are set, and facility level, where savings must be achieved. A 2019 survey of 86 companies with revenues of at least US\$1bn, carried out by Ecolab and media company Greenbiz, found that while 59% said water security was a growing business risk and 88% said they would actively monitor water use in the next three years, 44% said they had no plan in place to achieve this.

Tenuto is optimistic that businesses have begun to connect water with climate mitigation efforts. "It takes energy to move water around, or to condition it, or use it in operations. If you can reduce your water use, that also reduces your greenhouse gas emissions and climate change impact," he says.

Lamb agrees. "If you've failed to deal with water, you've failed to deal with climate," she says. 🌱

CATHERINE EARLY is a freelance journalist



THE AWS STANDARD

In 2014, the Alliance for Water Stewardship (AWS) – a global organisation whose membership includes businesses, campaign groups and the public sector – launched the AWS Standard to establish a framework for sustainable water use. Companies seeking certification agree to gather data, create and implement a water stewardship plan, evaluate performance and disclose progress with stakeholders. Sites are independently audited. More than 70 sites have now met the standard, with owners



Resources

including Nestlé Waters, Coca-Cola and Ecolab. "The types of businesses who use the standard and engage with us are broadly speaking food and beverage production businesses, retailers and their agricultural supply chains," says Scott McCready, AWS director of outreach and engagement. Several sites operated by micro-electronics companies and their supply chains in China and south east Asia have also achieved certification.

"People are realising that water is a catchment-based issue, so their awareness has risen from internal efficiency focus, through to wider catchment-based realisation that their business is only part of the solution," he says.

CASE STUDIES

Ecolab, Louisiana, USA

Ecolab's plant in Garyville, Louisiana was AWS certified last year. It is dependent on water pulled directly from the Mississippi River and treated on-site, and has reduced its water use by 159m litres a year through projects such as recycling wastewater and improving the efficiency of condensate return and the cooling tower. It also worked with The Nature Conservancy to reconnect the river with its historic floodplain, benefiting wetland habitat and local communities. The project has vastly increased the volume of water available to the plant. "It's an 'and', not an 'or' – you have to both reduce withdrawal into your facilities by driving efficiencies, and work with the wider community to improve supply," says senior vice president of water sustainability Emilio Tenuto.

Tata Chemicals, Gujarat, India

Tata Chemicals is a CDP A-list rated company on water security. Its improved recycling and water management led to a 98% reduction of third-party water use and a 99% reduction of groundwater use at its soda ash plant in the drought-prone state of Gujarat.

One of its main measures to cut freshwater use was building a number of desalination plants to transform surrounding seawater into freshwater. Building the infrastructure was expensive, but the firm sells the salt produced to offset the cost, explains Alka Talwar, the firm's chief corporate social responsibility and sustainability officer. "It's much cheaper to take water off a lake than to build a desalination system, but the fact that we could come up with an alternate product addressed the issue of cost," she says.



ff-grid solar energy is far removed from the minds of many in the West – but it is increasingly common in developing

countries. Clean and socially responsible, off-grid solar is lifting millions out of poverty and has the potential to do the same for countless more. It is also attracting colossal amounts of investment, and promises to remain on an upward trajectory.

Off-grid solar is produced and used exclusively on-site, instead of off-setting the use of grid energy or earning money

for its owner through feed-in tariffs. According to 2019 figures, it accounts for roughly 85% of all off-grid solutions. There are three broad areas: pico, medium, and large-scale. It is important to understand the difference, since the off-grid solar market is really three different markets under one umbrella.

Pico is used to describe small devices such as torches, lamps and radios that charge throughout the day and are used after sunset. These products, such as the Little Sun Original and d.light's A2, have made up 83% of all sales in the sector since 2010. This is also the area with the most players in it, all jostling to bring out

the best products and capture the largest market share.

In the medium bracket, solutions tend to be based around small single buildings such as family dwellings, rural schools and clinics. Here, a single array with a handful of panels is installed. This area has seen heavy investment: in 2013, Coca-Cola partnered with One Degree Solar to place 100 solar-powered kiosks in Kenya over six months. Similar schemes in conjunction with organisations such as AB InBev, Munich Re, Total, Siemens and Ericsson have been rolled out across Ethiopia, Botswana, Tanzania, Rwanda, Ghana, Jordan and Bangladesh.

Unlocking the grid

There are signs that the off-grid solar generation market is about to mature – has the time come for careful investment in this sector? **Pete Carvill** finds out



- ☛ Pico off-grid solar includes devices such as torches, lamps and radios, which charge during the day for use after sunset
- ☛ Solar kiosks, such as those produced by Solarkiosk Solutions, are an example of medium-scale off-grid solar devices



Large off-grid solar installations are for rural setups such as mines, replacing the use of fossil fuels for power generation. The costs are amortised over a number of decades.

Outstanding growth

This is all happening within a rapidly growing market. A recent report from Wood Mackenzie, *Strategic investments in off-grid energy access: Scaling the utility of the future for the last mile*, states that this technology helped 400m people gain access to electricity between 2010 and 2017. This number is expected to increase to 740m by 2022. There is room for growth, too: the World Bank's *Off-Grid Solar Market Trends Report 2020* states that market penetration stands at only 17%, and that the sector has seen investment of US\$1.5bn since 2012. Figures supplied by the Global Off-Grid Lighting Association (GOGLA) state that the sector has an annual value of US\$1.75bn.

Growth remains outstanding. As the World Bank report states: "Sales revenues are growing rapidly at 30% annually due to increased sales of higher-priced, PAYGo-enabled products that provide increased levels of energy service. In 2016, the industry reached a significant milestone, surpassing US\$1bn in annual turnover. Since then, turnover has continued to grow rapidly to reach approximately US\$1.75bn in 2019. This represents an annual growth rate of 30% over the period 2017 to 2019."

This growth in turnover "is bolstered largely by increasing sales of larger systems, predominantly through PAYGo-enabled solar home systems, that provide higher service levels to customers."

There is evidence that the market is seeing the investment it needs, although

it is unclear whether this will be enough. For this growth to continue at current rates, the World Bank report states that investment of up to US\$2.2bn will be needed during the next five years. Even so, Wood Mackenzie reports that investment in off-grid, mini-grid and universal access projects is growing steeply, with commitments rising 37% between 2016 and 2017, and 22% between 2017 and 2018. This comes at a time when GOGLA and the World Bank's Lighting Global programme are reporting record six-month levels of off-grid solar deployment, with nearly 700,000 solar home systems and 2.8m solar lanterns sold.

"Off-grid solar helps users save money and protect the environment"

The market is now reaching a level of maturity: between 2010 and 2012, market growth was 245% a year; between 2012 and 2015, it was 79%; and it fell 2% between 2015 and 2017. The market rose again by 10% between 2017 and 2019, and has since stabilised.

Light in the dark

Across the globe, 840m people have no access to electricity, and a further 1bn are connected to an unreliable grid. Off-grid solar helps users save money and protect the environment, and its knock-on effects include economic boons such as improved educational outcomes and job opportunities in the installation and maintenance of these systems. This boon could be immense. Firstly, there

are the direct savings. According to Wood Mackenzie, a utility grid connection for a rural village costs between US\$500 and US\$2,200 per connection, but a small-scale solar setup costs only between US\$80 and US\$550.

The data analytics firm 60 Decibels found that rural schools with an off-grid system were able to stay open for an hour longer each day. There are also the cost savings that come from eliminating the need for expensive, dirty, and dangerous fuels such as kerosene.

An independent energy source also means independence for consumers. 60 Decibels found that nearly a fifth were using off-grid solar for profit-making activities. In its report *Why Off-Grid Energy Matters*, the organisation found that "the most-common uses were power for bars, restaurants, shops, or kiosks. For solar water pumps, the use was linked to agriculture, and for TVs, business customers often ran video halls."

The environmental impact may also prove substantial. 60 Decibels

found that for the relatively low price of US\$5 for a solar lantern instead of kerosene, consumers could reduce their CO₂ and black carbon emissions by 461kg per year – about 10% of that produced by the average car during the same period.

The market for off-grid solar could be game-changing during the next decade. It is also a relatively nascent sector. The questions around financing run deep, and many still find their way to businesses with bad practices. However, make no mistake about the potential here. The only questions are who will harness it, and how.

PETE CARVILL is a freelance journalist.

The Great Green Wall is an African-led initiative that aims to combat desertification, reduce poverty and address climate change by restoring and managing a belt of land across the Sahel, from Senegal to Djibouti. It was originally envisioned as the restoration of an 8,000km-long, 15km-wide band of trees, in defence against an advancing Sahara.

However, environmental changes in dryland ecological systems are nuanced, and notions of a desertification crisis in the region have long been critiqued by scientists. The project has thus evolved, and now plans to create a 780m-hectare mosaic of restored, healthy, productive and resilient landscapes across the Sahel – principally through targeted investments in land restoration, natural regeneration and sustainable land management. The land's restored ecological function could positively impact the livelihoods of around 232 million people.

The initiative has secured political will and solidarity among the 21 African countries now involved, as well as financial resources from the international community – including more than US\$4bn of pledged donor funding. However, between 2007 and 2017, only 15% of the original target of 100m hectares was restored, mainly through the planting of 12m trees in Senegal. There is a growing sense that to meet the initiative's ambitions, significant scale-up of financing and action is required. The private sector's role, as a source of investment and as a key partner with influence on the ground, will be critical.

Finance and technical assistance

There is no dedicated national or region-wide public-private investment funding platform for the Great Green Wall, which means it is reliant on public financing and the willingness of local farmers. This reflects the global land restoration market context: of the estimated US\$5-10bn currently invested in forest and landscape restoration each year, 90% still comes from public sources. There is space for optimism, however, as a growing number of agroforestry investment funds are currently seeking investable projects and can provide much-needed technical support to project developers. Examples such as the Land Degradation Neutrality Fund, established in 2016 by the UN Convention to Combat Desertification's Global Mechanism, or the Moringa Fund, established in 2010, show there is no shortage of private capital.



Scaling the wall

Daniel McGahey and **Jonathan Davies** discuss boosting private investment in the Great Green Wall, a landscape restoration project spanning the African Sahel region

Most Great Green Wall countries lack sufficient objective evidence on the scale of land degradation. This makes it tricky to target actions and monitor progress. The Sahel's land cover consists of a transition between moist Guinea savannah woodlands to the south and decreasing tree cover to the north, where the landscape transitions through grassland, thorny shrubland and desert ecosystem. Businesses need to know where they can invest in tree cover restoration, where agribusinesses can be incentivised to adopt sustainable land management practices, and where sustainable livestock production can be promoted to restore degraded grasslands.

Detailed satellite mapping, using measurements of net primary productivity, is needed in grasslands and savannahs – but is rarely conducted. This means that grassland degradation



- ◀ Degraded landscape with gullies
- 📍 A land rehabilitation site in eastern Senegal
- 👤 Using stones to control soil erosion – an example of sustainable land management on the ground

Project spotlight

780m 90%

The Great Green Wall aims to create 780m hectares of restored landscape

of money invested in forest and landscape restoration comes from public sources

through overgrazing-induced bush encroachment and invasive species is poorly monitored. In 2016, the UN Food and Agriculture Organization published analysis suggesting that 166m hectares of this region has inadequate tree cover, but did not estimate the ecosystem restoration potential for grasslands, which cover 243m hectares of the Great Green Wall area.

Underlying values

Public agencies aiming to stimulate private sector engagement must understand the ecosystem service values that are at stake, and the value they present to the market. Much of the land targeted for restoration is productive dryland, primarily used for agriculture. Restoration is possible through sustainable land management, including practices such as agroforestry, conservation agriculture and pasture management.

Restored agricultural dryland can provide a number of benefits in addition to enhanced food production: it can improve green water storage, reduce drought risks, improve groundwater supplies, enhance soil carbon stocks, and contribute to climate change mitigation and biodiversity conservation. These benefits include off-farm values for which regional or international ecosystem service markets may or may not be available.

Governments need a better understanding of the role that private sector investment will play. This understanding is required on a number of levels, from the daily decision-making of farmers around the risks associated with changing production systems, to the policies and perverse incentives that limit investment in sustainable practices or ecosystem service products.

Restoring agricultural drylands within the Great Green Wall will create marketable products for farmers, including gums, resins, fruits and nuts – all of which have established international value chains. Ecosystem service benefits such as carbon

232m 21

The initiative could **improve the lives of** 232 million people

African countries are involved



sequestration create opportunities to attract investors that are interested in certified voluntary carbon offsets.

Successful examples exist, and partnerships between NGOs, aid agencies, multinational companies and communities are common. In Chad, for example, an acacia gum project led by NGO SOS Sahel involved a public-private sector financing coalition between the French Development Agency, Swiss flavour company Firmenich, global agrifood business Danone and French natural ingredient retailer Nexira. The partnership improved the livelihoods of some 60,000 people involved in gum production and the preservation of acacia gum forests.

An enabling policy framework

Strong international value chains can be linked to natural gum, resin and nut products from restored dryland agroforestry landscapes. These value chains help to generate revenues that de-risk investments. The region has several agroforestry restoration traditions, such as farmer-assisted natural regeneration, that provide a scientific evidence base facilitating carbon certification. However, capitalising on these enabling factors and scaling up positive examples will require a mindset change in a region where agricultural development policy tends to favour capital-intensive commercial farming.

There needs to be reform of public policies to remove negative regulatory incentives such as subsidies or taxes. One example would be to provide farmers with secure tenure so that they can invest in and manage trees and forest products.

Many such incentives could be reformed, and blended public-private financing mechanisms used, to enable the wider adoption and scale-up of land restoration across the Great Green Wall. 📌

FURTHER READING

Find out more about the Great Green Wall project in *Building Africa's Great Green Wall: Restoring Degraded Drylands for Stronger and More Resilient Communities*, at bit.ly/3dRh6Lk

Read the UN report *Sustainable Financing for Forest and Landscape Restoration: Opportunities, Challenges and the Way Forward* at bit.ly/3cRE1F1

DR DANIEL MCGAHEY, MIEMA CEnv, is an environmental consultant with Earth Systems Ltd and works on international environmental management and assessment projects across Africa and south-east Asia.

DR JONATHAN DAVIES is global drylands coordinator and senior agriculture advisor at the International Union for Conservation of Nature.



Natural intelligence

Chris Seekings investigates how partnerships between NGOs and giant technology companies are harnessing the power of data to unmask the secrets in nature

The World Wide Fund for Nature (WWF) recently asked UK families to help scientists monitor biodiversity trends by identifying species in their gardens using iNaturalist's Seek app. Participants were able to measure everything from birds and insects to plants, flowers and fungi through the app's artificial intelligence (AI) technology, with the findings used to build a better picture of the nation's wildlife.

This is just one example of AI's use in conservation; far larger projects, involving satellite imagery and machine learning, are giving scientists unprecedented insights into the natural world. "The application of AI in wildlife protection is full of infinite potential," a WWF spokesperson tells me. "It can not only improve protection efficiency, but

also help protection managers better understand the implementation of their own protected areas."

While thousands of new species are discovered each year, it is thought that there are millions more waiting to be found. Much of the planet, and animals' interaction with it, remains a mystery – but NGOs are now harnessing the power of AI to shine a light onto these great unknowns.

Tech for tigers

In 2018, the WWF and tech giant Intel launched a new project to monitor wild Amur tigers in China as part of an effort to double their numbers by 2022 – the next Chinese year of the tiger. In 2010, there were thought to be just 20 living in China; around 550 exist today.

Previously, monitoring animals involved sifting through hundreds of thousands of images caught by camera traps. These camera traps are often triggered accidentally by a moving branch, leading to many blank frames. Intel's AI technology identifies whether a tiger and or another wild animal is in shot before the image is captured, ensuring every picture is useful.

"The field monitoring of wild Amur tigers is the basic premise to ensure population recovery," says Peiqi Liu, WWF China's head of Northeast China Project.

"AI helps us identify and record the monitoring information of the tigers in a fast and real-time manner, reducing the heavy workload of manual screening and effectively improving monitoring efficiency."



"We hope that with the support of AI technology, wildlife protection can become more efficient"

Perhaps the most impressive feature of Intel's AI technology is its ability to identify individual tigers. Each tiger has a unique stripe pattern, much like a human fingerprint. Conservationists have previously had to compare these patterns against a catalogue of images to identify them – a time-consuming and costly process – but Intel scientists have 'trained' the AI technology to recognise individual tigers from their stripes. "AI's biggest advantage is that it can achieve high accuracy recognition ability through massive self-learning, so as to liberate the time of protection workers and assist them and scientific researchers to carry out protection work more efficiently," Liu says.

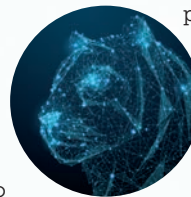
AI for Earth

These partnerships are particularly important when you consider the International Union for Conservation of Nature's goal of assessing at least 160,000

species by 2020. Microsoft has been empowering NGOs with AI and cloud tools for years. It launched its AI for Earth initiative in 2017, and has since dished out more than 300 grants to research teams leveraging AI to monitor and manage the planet's natural systems.

"We know so little about the natural world around us because we lack data at the right level of granularity and accuracy," Microsoft chief environmental officer Lucas Joppa has said. "Ultimately, this means interventions are often made on good intentions and best guesses alone. The planet needs better than a guess, and researchers and practitioners need the right resources."

AI for Earth's partnerships create large-scale habitat maps for imperilled species, combining aerial imagery, machine learning and AI to survey vast landscapes. Like the WWF-Intel



partnership, this frees up time for researchers who would traditionally look through numerous images to monitor certain species.

One particular landmark for Microsoft was the creation of a chip solution that can plough through nearly 200m images in just over 10 minutes, at a cost of US\$42. These results pave the way for organisations to produce new, high-resolution land cover maps on infrastructure that can scale up or down for all sorts of problems around the world.

"Algorithms need to be both fast and accurate, and there's still a lot of work and testing to do on that front," Joppa continued. "Nonetheless, these speedy results are a good first step in empowering people to apply AI at earth scale. And, of course, land cover mapping is just one of over 100 projects in which we have invested."

Biodiversity

Into the deep

Meanwhile, professional services giant Accenture has collaborated with Intel and the Sulubaa'i Environmental Foundation NGO to monitor, characterise and analyse coral reef resiliency in the Philippines through its Project: CORaIL initiative.

These reefs provide habitats and shelter for approximately 25% of global marine life, and also protect coastlines from tropical storms, providing food and income for one billion people while generating US\$9.6bn in tourism and recreation annually. However, the reefs are being rapidly degraded by overfishing, bottom trawling, warming temperatures and unsustainable coastal development.

"The Philippines' coral reefs have suffered due to destructive fishing methods and low marine resources management," a Sulubaa'i spokesperson tells me. "Local populations depend on fish resources, so it is absolutely necessary to preserve, restore and manage the marine resources."

Traditional coral reef monitoring involves human divers manually capturing video footage and photos of the reef; this can be inefficient and dangerous. Engineers from Accenture, Intel and Sulubaa'i have strategically placed intelligent underwater video cameras, equipped with Accenture's Applied Intelligence Video Analytics Services Platform, to detect and photograph fish as they pass by, counting and classifying marine life. The data is then sent to a surface dashboard, providing analytics and trends to researchers on the ground in real-time and thus enabling them to make data-driven decisions that will help the reef progress.

"Traditional coral reef monitoring can be disruptive to marine life as divers may inadvertently frighten fish into hiding, in addition to being dangerous



"AI's biggest advantage is that it can achieve high accuracy recognition ability through massive self-learning"

and time intensive," Accenture Applied Intelligence managing director Ewen Plougastel explains. "Divers can also interfere with wildlife behaviour and inadvertently modify survey results. These constraints are solved with our AI and edge computing technology that samples over long periods, allowing our engineers to focus on the analysis and strategy for the project – outside of the water, and remotely."

Since being deployed in May 2019, the solution has collected more than 71,000 images, which researchers have used to gauge reef health by analysing fish populations in real-time. "AI is empowering our engineers to achieve more and learn faster when it comes to the evolution of the marine life population within a coral reef," Plougastel says. "What we've developed here could be used to monitor other fragile reef ecosystems, like the Great Barrier Reef and the Mesoamerican Reef. We are looking into infrared cameras which will enable videos at night to create a complete picture of the coral ecosystem."

Endless possibilities

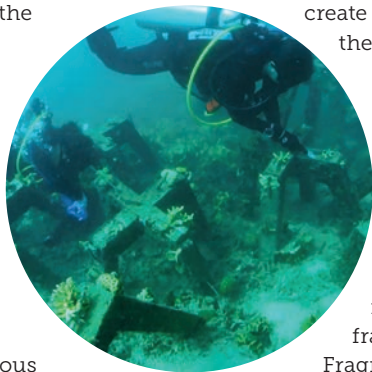
The engineers have also implemented the Sulu-Reef Prosthesis, an artificial concrete reef, to provide support for unstable coral fragments under water. Fragments of living coral

were planted on it and will grow and expand, providing a hybrid habitat for fish and marine life.

These are just a few of the ways that AI is being used for biodiversity protection. From infrared cameras and drones to blockchain and satellite image processing, the possibilities are endless; conservationists are also using the technology to tackle poaching and deforestation. "There are many applications for AI where we can focus on social good and improving people's lives, such as monitoring data around global warming and climate change or examining the migration of animals in parts of the world where poaching is an issue," Plougastel explains. "But AI should be an added contributor to how people perform their work, rather than a backdrop for automation."

Although AI may seem far removed from the natural world, it provides unprecedented opportunities for solving some of society's most vexing problems, and these partnerships show how collaboration between big tech and NGOs can have positive and sustainable environmental impacts.

"At the same time, more professional teams are needed to actively join in order to make the best use of AI," Liu tells me. "We hope that with the support of AI technology, wildlife protection can become more efficient. We also hope to use AI technology to bring more benefits to local community residents, achieving the goal of harmonious coexistence between humans and nature." 🌱





Strategies for cities

Hannah Lesbirel reflects on how the circular economy could boost cities' resilience

The 'take-make-dispose' linear consumption pattern is facing constraints as resource availability declines. This, coupled with the rising demand from the world's growing and increasingly affluent population, has led to higher price levels and volatility in many markets. The linear system's generation of waste, pollution, materials and value leak makes it difficult to solve the social, political, economic and environmental issues that compromise cities' resilience against shocks.

Urban problems can be addressed by applying circular economy and resilience thinking to decision-making, in both the developed and developing world. A circular economy is restorative and regenerative and aims to keep products, components and materials at their highest utility and value, distinguishing between technical and biological cycles. Circular economies will benefit from substantial net material savings, mitigation of volatility and supply risks, positive multipliers, potential employment benefits, reduced externalities, and long-term resilience of the economy.

Tools for resilience

The Ellen MacArthur Foundation is at the forefront of circular economy research and action. It developed the ReSOLVE framework (Figure 1), and has shown the value of applying circular economy principles to structural design and development. The framework is a tool for generating circular strategies and growth initiatives, featuring six action areas.

100 Resilient Cities (100RC), which wound down in July 2019, led several city resilience strategies, partnering with organisations across the world. With Arup, it also developed the City Resilience Index, which provides a comprehensive,

FIGURE 1: THE ReSOLVE FRAMEWORK

REGENERATE

Shifting to renewable energy and materials, reclaiming, retaining and regenerating the health of the ecosystems

SHARE

Maximising utilisation of production, sharing them among different users, reusing them through their entire technical lifetime and prolonging their lifetime through maintenance, repair and design for durability

OPTIMISE

Increasing performance and efficiency of products, removing waste in production and supply chains, leveraging big data, automation and remote sensing

LOOP

Keeping components and materials in closed loops, and prioritising inner loops

VIRTUALISE

Dematerialising resource use by delivering utility virtually

EXCHANGE

Replacing old with advanced non-renewable materials, applying new technologies and choosing new products/services

technically robust, globally applicable basis for measuring city resilience. The index reflects the overall capacity of a city (individuals, communities, institutions, businesses and systems) to survive, adapt and thrive no matter what kinds of chronic stresses or acute shocks it experiences. It comprises 52 indicators, which are assessed based on responses to 156 questions through a combination of qualitative and quantitative data.

There are several opportunities for implementing circular economy initiatives to improve city resilience:

- Technological innovation can create an ever-greater opportunity to support circular economy business models
- Consumer acceptance of alternative business models, and young consumers' lifestyle choices, can shift the economic model away from the linear system
- Responsible investment and green bonds have increased significantly in recent years; many investment firms are encouraging mainstream adoption of responsible investment
- Increased urbanisation means many asset-sharing services and those collecting and treating end-of-use materials will benefit from higher drop-off and pick-up density, simpler logistics, and greater appeal and scale. Centralised use should mean reverse logistics become more efficient and cost effective.

Linking the circular economy and resilience can achieve many benefits, including net material savings, reduced exposure to price volatility, increased innovation and job creation potential, and increased resilience in living systems and the economy. 

HANNAH LESBIREL is co-chair of IEMA Futures



Before the huge disruption of the COVID-19 pandemic, there had been some sizeable shifts towards sustainability within fashion. Many designers, including Stella McCartney, and brands such as Patagonia have long been providing sustainable and cruelty-free products, along with a tangible commitment to producing less waste.

The 2013 Rana Plaza disaster in Bangladesh alerted consumers to the social conditions of garment workers in factories. High street brands are now having to provide greater transparency within their global supply chains, and improve their sustainable credentials – especially as fashion has been exposed across mainstream media as the world's second-largest polluting industry. New technology has prompted greater innovation, and online platforms such as SupplyCompass have been offering a designer-to-store service, greatly reducing waste and carbon footprints.

But according to a recent report, *The State of Fashion 2020*, published jointly by The Business of Fashion and McKinsey & Company, the industry is in an unprecedented crisis. And the recession that will inevitably follow the global pandemic is likely to dampen consumer enthusiasm. "Once the dust settles on the immediate crisis, fashion will face a recessionary market... As an industry, we are on red-alert."

But there could be an upside. The report also suggests that "the resulting 'quarantine of consumption' could accelerate some consumer shifts, such as a growing antipathy toward waste-producing business models, and heightened expectations for purpose-driven, sustainable action."

So, in the manner of Noah building his ark, could the more enlightened and sustainable businesses be most likely to survive? Or will the industry be overshadowed by cancelled orders and unused fabrics, creating a waste and unemployment crisis? 🌱

Can sustainability be the saviour of the fashion industry after the pandemic or will it become another casualty? **Kathryn Manning** reports

What will COVID-19 mean for sustainable fashion?



Do you think the COVID-19 pandemic will help or hinder sustainable style?
To publish your views, contact features@iema-transform.com

The big question

Coronavirus: Effects on the fashion industry



DR PATSY PERRY

Senior lecturer in fashion marketing in the Department of Materials, University of Manchester

"Lockdown has forced a slump in consumption"

It remains to be seen whether retailers will shelve their sustainability commitments due to the financial hit from the pandemic, but we have seen positive effects in terms of reduced emissions and water pollution as factories have shut. However, cancelled orders have had an effect on the poorest workers in the supply chain.

The lockdown has forced a slump in consumption. Billions of pounds worth of unsold stock is sitting in many warehouses, and the cost of storing it may not be viable. Some brands have been repurposing materials from previous collections or deadstock fabrics to make masks for consumers, as well as hospital gowns for medical workers. There is also the issue of cancelled orders sitting in producing countries such as Bangladesh, which now have no route to market.

Will consumers 'buy less, buy better' as we emerge from lockdown? Or will we see a return to overconsumption? The fashion business model is based on fast manufacturing, low quality and short life cycles, leading to waste and overconsumption. Consumers must see fashion as functional rather than entertainment and be ready to pay higher prices that account for its environmental impact, while retailers must shift to a slower paradigm.



MARY CREAGH

Visiting professor, Cranfield University; Labour MP 2005-19

"Export and recycling markets are shut"

The collapse in global trade is having a huge impact on the textile recycling industry. The UK has one of the largest such industries in the world, with more than 1m tonnes of textiles discarded each year. Roughly one third goes to landfill or incineration, and the rest is collected by councils and charities and sold for reuse, recycling and export.

The Textile Recycling Association is seeking government help to deal with the collapse in trade to key export markets such as Kenya, which has banned used clothing imports. Oversupply and lack of demand have left recyclers with full warehouses.

This will have an effect on charities that have shut shops and seen revenues collapse, and councils that have spent millions tackling the emergency. As recycling centres and charity shops reopen, there will be a boom in clothing disposal and donation – but less clothing will be sold in charity shops because of social distancing, and export and recycling markets are effectively shut. Recyclers warn that they will be unable to pay councils and charities for the textiles they collect.

The extended producer responsibility levy of a penny on every garment, recommended by Parliament's Environmental Audit Committee, could help to reduce supply, subsidise collectors and protect jobs.



FLORA DAVIDSON

Flora Davidson is co-founder of product development and production management platform SupplyCompass

"Supply chain mapping will see renewed focus"

While the momentum of some sustainability initiatives has slowed, I'm hopeful that the ambitious sustainable fashion goals made since 2019 will be approached with renewed vigour when lockdown ends. We're starting to see brands shift away from trends in favour of trans-seasonal, timeless pieces – reducing the amount of unsold products that are heavily discounted at the end of the season.

Supply chain transparency and mapping will see renewed focus. COVID-19 has forced brands to see the importance of controlling supply chains. If you don't know where every partner is, it becomes challenging to identify, anticipate and manage risk.

Where 'normal' ways of working have been turned on their head, there is opportunity for experimentation. I am hopeful that this crisis will be a catalyst for change. We're already seeing businesses explore new solutions. Look at how fast everyone has adapted in response to the pandemic – what other changes businesses could make?

I see an opportunity for brands to reinvent, adapt and experiment with new technologies and ways of working. Adapt to survive – perhaps some businesses may even prosper unexpectedly as a result.



#BeyondPlastic Taskforce, FCO

Andrew Collingridge, lead at the Foreign and Commonwealth Office's #BeyondPlastic Centre of Excellence, talks about winning Best Team and tackling the issue of single-use plastics

What was the initial aim of #BeyondPlastic?

Having got the agreement of the Foreign Secretary, the initial task was to define how it would be translated to the wider office. The most important thing was coming up with a definition, which the civil service adopted widely – that the plastic had to be avoidable, it had to be financially sensible, and would actually achieve something.

How did you enable your staff to engage with the programme?

It's a big help when the man at the top supports it and says 'this is what we are going to do'. There was an intense communications plan, so it was constantly in the news and in front of people. There are two phases – the UK, and the rest of the world, where 300 posts are trying to achieve the same thing. We came up with the Kickstarter, funding small amounts of money to help people do the right thing. In the UK, people did simple things such as buying crockery rather than disposable plastic plates and forks. In a sense, timing was really fortunate in that it all came off the back of *Blue Planet II*, and David Attenborough's highlighting of the issue.

Were there any challenges in reducing the use of plastic throughout your operation?

Inevitably, overseas there are different social attitudes – to the extent that they may not even know there's a problem – whereas in the UK we are in a primed state of readiness. One challenge in the

UK was the ability of industry to provide alternatives. We were very fortunate with our service management people – the majority of plastic provision was in catering. Individuals were positive, proactive and open-minded. The main challenges were difficulties from a cost perspective. Because we spend taxpayers' money we can't just throw money at things – but over time, it became more affordable and more possible. So it's a constant watching process as well.

"The level of engagement has been the most satisfying thing about this"

What were the ultimate successes of the programme?

It was the extent to which people, not just in the UK, but also around the network, wanted to do it. The level of enthusiasm and engagement, and people going the extra mile has been the most satisfying thing about this.

What are the plans for the taskforce, and what are its future goals?

In the UK we still have work to do with our supply chains and through our procurement people, to set out the improvements they make in a way that's tangible for the layperson. The main

HIGHLIGHTS:

- In just 10 months, the FCO achieved a reduction of 97% of its baseline figure of 1.56m items of avoidable single-use plastic in the UK
- With help from Interserve (its facilities manager and catering supplier), the FCO removed 655,000 plastic disposable coffee cups, 285,000 plastic water cups, 303,000 disposable take-away items and 100,000 plastic drink bottles from its waste stream
- Overseas, embassies have saved more than 1m items of single-use plastic each year, with 32 having committed to dates by which they will have declared themselves free of avoidable single-use plastic

target is wrapping up the global network with a big degree of success by the end of 2020.

We have a number of posts with good progress, but because of coronavirus we have been involved with repatriations and arranging charter flights, so the project has dropped down the list of priorities. There's also the question of whether attitudes may have changed – we will see what public and individual attitudes will be when it comes to things like perceived hygiene and cleanliness. People need time and space to get back to it properly, but I'm optimistic. One of the main objectives all the way along has been to make sure this is embedded behaviour, not a one-off.

What did you think of last year's awards ceremony?

I thought it was super. It was particularly interesting to see the scope and the range of other things people were doing – some were amazing! It was in a great place with good company and good food – I look forward to the next one. 🍷

CONNECT

SOCIAL AND COMMUNITY NEWS FROM IEMA

Finding your happy place



The IEMA Book Club webinar on 28 May discussed *Happy City* by Charles Montgomery. Marek Bidwell and a panel of five members assembled for a wide-ranging discussion. The book considers how cities have been planned and managed, and asks why some of the most prosperous cities have some of the unhappiest citizens. The webinar was interactive, with panellists responding to comments from an audience of around 50. Several said the book encouraged them to think differently about their areas.

Key points discussed were:

- The importance of accessible green space in cities for physical and mental health
- The need to put people before profit or aesthetic architectural design
- How to influence and change planning regulations
- What if happiness took centre stage as we reimagine communities post-COVID-19?
- Safer transport options should be a priority, with emphasis on cycling and walking
- Greater investment in smart cities, particularly increasing broadband access and speeds.

The panel concluded that the priorities for a 'happy city' were people – and taking back control of the places we live in.

➤ **The Book Club is aiming to become quarterly – look out for announcements.**

BOOK REVIEW

Beyond Global Warming

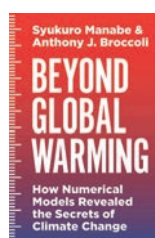
Beyond Global Warming by Syukuro Manabe and Anthony J Broccoli discusses exactly how carbon dioxide causes global warming. It evolved from the research and lecture notes of Manabe's Princeton University course on atmospheric and oceanic science, and will be most useful to readers with advanced maths and physics knowledge. It delves deep into the equations that model how heat circulates between and within the atmosphere and oceans, accounting for solar radiation.

Each chapter builds upon the last, describing how climate models evolved from the 1900s to the present day. At first, relatively simple equations only considered the vertical distribution of heat in the atmosphere. Later models took into account the circulation of

wind and temperature around the earth. Eventually, complexities such as the transfer of heat between the atmosphere and oceans were added. Three fascinating themes are: how models developed in parallel with computers; the ongoing search for climate sensitivity; and how climate models provide a deeper understanding of how the climate system works.

The book also gave an insight into the history of climate scientists such as John Tyndall, who identified that CO₂ causes a greenhouse effect in the 1850s, and Guy Stewart Callendar, who proposed in 1923 that humans' increased CO₂ emissions were heating the atmosphere.

Marek Bidwell



QUOTE UNQUOTE

'Chris has broken the mould in being the first winner of the newcomer award, which is a fantastic tribute to his commitment & energy in the first stages of his career.' IEMA CEO @mukherjee_sarah. Well done @ChrisLandsburgh MIEMA CEnv on your award-winning #environmental work! @IEMANET



2020 Registrant Newcomer of the Year Winner



Chris Landsburgh CEnv

Huge congratulations to IEMA member @DavidSymons FIEMA #CEnv from @wsp for winning the @SocEnv_HQ 2020 Environmental Professional of the Year Award! Big well done to all the finalists in this category too. #SocEnvAwards #Environment #Sustainability @IEMANET

In @IEMA_Transform this month a really interesting article by @Bankfieldbecky @LancasterUni about why democracy needs to be redesigned to tackle Climate Change. Covid-19 has shown we can do things differently when needed. #ClimateChange @GreenLibDems @LEEDSNWLIBDEMS



Love the front cover of this month's @IEMA_Transform #feelingthesting @iemanet @CARLHWEST





Why did you become an environment/sustainability professional?

I was working on the applications of behaviour change theories in the early 80s and was keen to combine this with my personal interest in sustainability. I realised that I needed to know more about behaviours that I was meant to be encouraging. As a statistician, I was able to start piecing together an evidence base, and the rest is history.

What was your first job in this field, and how did you get your first role?

I tried to work environmental considerations into my early design work for IBM and Xerox, but my first major role only came after I co-founded sustainability consultancy Best Foot Forward (which became part of Anthesis in 2013) with Nicky Chambers in 1996. There were very few other opportunities to

pursue my interest in evidence-based environmental decision-making through metrics and user-friendly technology. Our first major project involved building the EcoCal software for Going for Green (a UK government initiative), arguably the first personal footprint calculator.

What does your current role involve?

I now sit on the Senior Leadership Team with oversight of the company's use of technology and sustainability metrics.

How has your role changed/progressed over the past few years?

My areas of responsibility have remained broadly the same, but the sector has transformed. Sustainability has gone mainstream, and is now a topic that spans sectors and is vertically integrated within a business – from factory floor to boardroom. Also, the company has undergone rapid growth. Our approach of delivering business value through sustainability is resonating strongly with businesses, cities, governments and investors.



Craig Simmons

FIEMA

Chief technology and metrics officer, Anthesis

What's the best part of your work?

Anthesis is growing by more than 20% each year and is continuously recruiting high calibre staff, which makes for an exciting and dynamic work environment. For example, our UK software team has more than doubled in the last year to ensure we can support growing demand.

What's the hardest part of your job?

Trying to fit everything in – especially finding the time to explore new product developments.

What was the last development event you attended?

I am always learning from conferences, seminars, clients, colleagues and self-study. We run a regular series of internal knowledge-sharing sessions and often extend these to clients using our Client Network platform.

What did you bring back to your job?

That after 35 years as a sustainability consultant, I still have things to learn.

"Sustainability is now vertically integrated within a business – from factory floor to boardroom"

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

Analytical thinking, problem reframing and resolution and relationship development.

Where do you see the profession going?

Reduction in ocean plastics, resource efficiency and the climate emergency are long-term challenges that will only be solved by teams of individuals with deep expertise, working globally.

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

It is an exciting time to be working at the interface between sustainability, data and technology. Anthesis is a great vehicle for me personally and I'm keen to stay involved as the company grows.

What advice would you give to someone entering the profession?

There are some great analytical and visualisation tools available. Learn them!

How do you use the IEMA Skills Map?

As a reference for me personally and to support recruitment.

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

Innovative, analytical, professional.

What motivates you?

The desire to leave a positive environmental legacy.

What would be your personal motto?

Triple-check everything.

Greatest risk you have ever taken?

Sailing across the Atlantic.

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

I never got to meet **Richard Buckminster Fuller**, who died in 1983. 🌐



IEMA Sustainability Impact Awards 2020

Inspiration | Innovation | Transformation

18 September 2020

Congratulations to the shortlist

We are thrilled to have announced the shortlist for the IEMA Sustainability Impact Awards 2020. Visit www.iemaawards.net to view the full shortlist. The number of projects, products and individuals shortlisted shows how much IEMA members, and the wider Environment and Sustainability community, value these Awards. One way or another, we will recognise innovation in sustainability at the IEMA Sustainability Impact Awards on Friday 18 September 2020.

During these extraordinary times it remains important to celebrate how individuals, teams and organisations take strides in transforming the world to sustainability. Showcasing the vital roles of environment and sustainability professionals will ensure that you are positioned at the heart of the societal and economic recovery. We will continue to monitor the Government's advice on large events and will update you nearer the time on whether we will be celebrating digitally or face-to-face.

Register now

Email enquiries@iemaawards.net to register your interest in attending. We will keep you updated on the details of the 2020 awards ceremony as they become clearer.

www.iemaawards.net

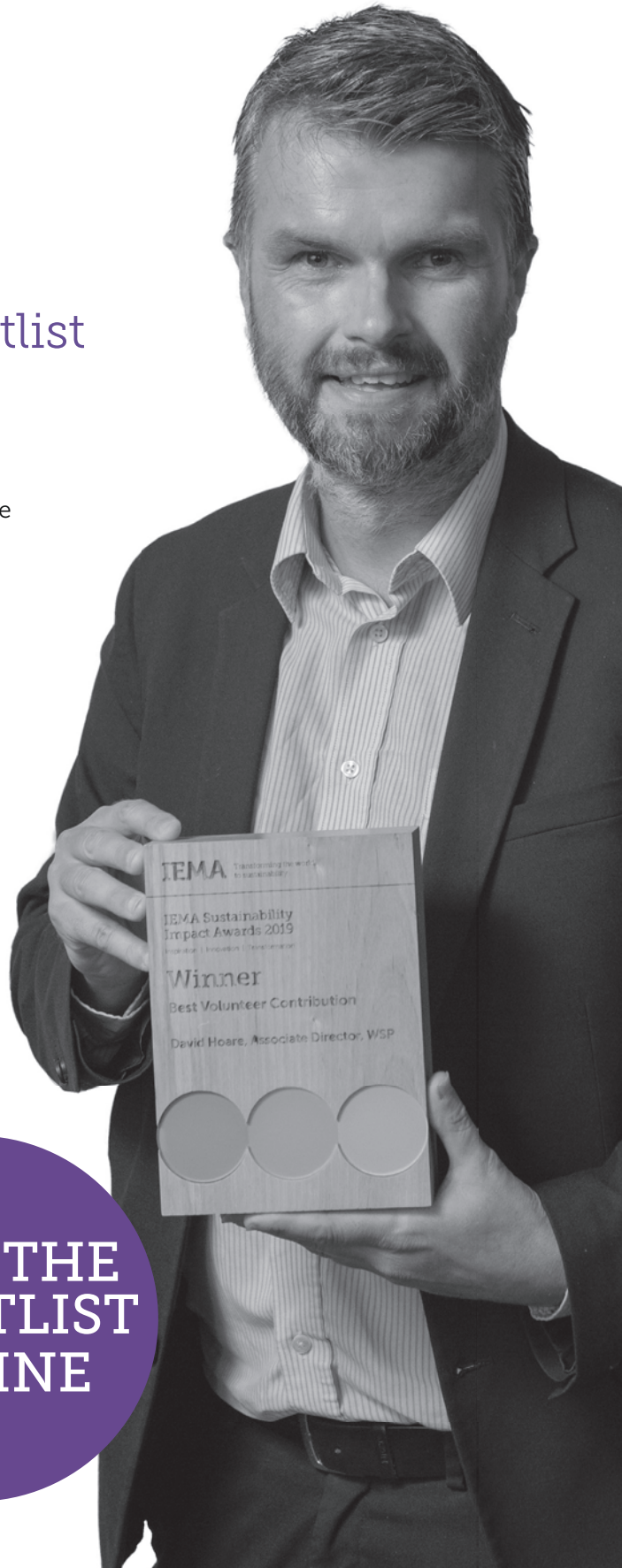
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to sustainability

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