

THE PATH TO A GREENER FUTURE

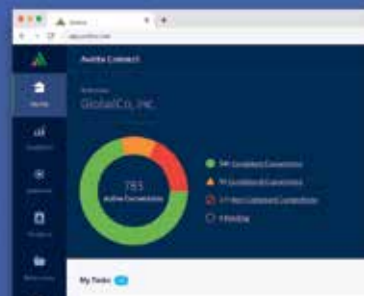
08 COP26 – THE SCALE OF THE CO₂ CHALLENGE

10 IS GEOENGINEERING WORTH THE RISKS?

12 GETTING TO GRIPS WITH SCOPE-THREE EMISSIONS



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THE PATH TO A GREENER FUTURE

Distributed in THE TIMES

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SKILLS

Will a lack of green talent scupper the UK's net-zero plans?

Achieving national carbon neutrality is likely to remain a pipe dream unless the government and the private sector can make urgent, substantial and well-targeted investments in training

Nick Easen

Green deals around the globe will remain stuck on amber as long as nations lack the skills to deliver a low-carbon economy. There simply aren't enough scientists, engineers, ESG experts and change management specialists to go round. If ministers and business leaders don't address the skills gap with retraining today, key national climate targets will not be met tomorrow.

The numbers are stark. According to an estimate by the International Energy Agency in June, 14 million jobs (including 117,000 in the UK) will have to be filled before the end of this decade merely to service the world's growing green energy infrastructure. Across the UK economy, 6.3 million jobs could be affected by the national push for carbon neutrality by 2050, requiring their holders to learn new skills. The government convened the Green Jobs Taskforce late last year to consider whether the country's zero-carbon ambitions are achievable, given the scale of the training task.

Esin Serin is a policy analyst at the Grantham Research Institute on Climate Change and the Environment, a unit of the London School of Economics. She observes that "matching the speed of the workforce transition with the urgency of investments in technology and infrastructure is a huge challenge".

The UK's most serious skills shortages exist in science, technology, engineering and maths – and there are too few STEM graduates in the pipeline. They are badly needed in sectors such as energy generation and car manufacturing. But other skills and industries are coming to the fore too, as many more sectors seek to decarbonise.

Nick Molho is executive director at the Aldersgate Group, a multi-stakeholder alliance that's seeking to achieve a sustainable economy. He notes that "transitioning businesses are increasingly seeking candidates with soft skills in areas such as project management and communication. These are critical, as many solutions to reduce emissions require different sectors to collaborate on complex initiatives. For instance, waste-management firm Suez and cement producer Cemex have worked together on a



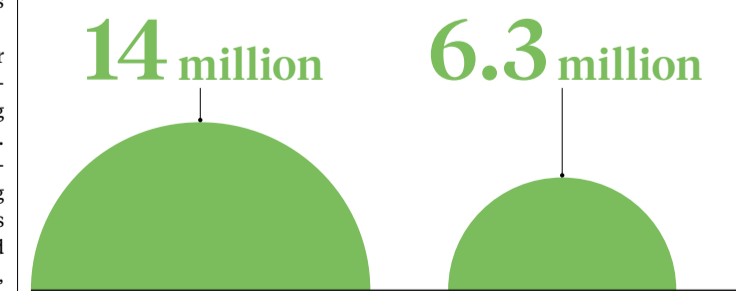
new low-carbon fuel, which is derived from the waste Suez collects. Cemex is using this to replace fossil fuels in its production plants."

There are calls among environmental experts and policy advisers for a comprehensive low-carbon skills strategy to match the ambitions of government and industry. At present, the focus is on the number of green jobs that will be created. But they will not be filled unless society can adapt, reskill and support these roles. There's also a need to draw on a diverse pool of candidates from different backgrounds.

"The HGV driver crunch that we're facing in the wake of Brexit and Covid will be just a preview of what's

to come if we don't substantially increase support for training programmes," warns Andrew Sudmant, a research fellow in the Centre for Climate Change Economics and Policy at the University of Leeds. "To shift all of the UK's homes to more sustainable heating systems by 2050, for instance, we would need to retrofit one home every 25 seconds. We definitely need to boost the number of workers with specific skills."

Many large businesses in the UK and beyond that are committed to net-zero goals have been creating online knowledge hubs and other educational tools, as well as embedding sustainability principles into their operations. This is happening



The number of jobs that will need to be filled before 2030 to service the world's growing green energy infrastructure

International Energy Agency, 2021

The number of British jobs that could be affected by the UK's push for carbon neutrality

Place Based Climate Action Network, 2021

in industries ranging from financial services to food and beverages. But there is no doubt that significant investments are needed if the needle on the skills dial is to be shifted at any kind of speed.

"Upskilling more than 2,400 of our farmer-owners and 3,000 colleagues across the country is a difficult task for us, especially given the pace of development in sustainability," admits Ash Amirahmadi, MD of Arla Foods UK. "The most important thing for us to acknowledge is that our company doesn't have all of the answers – although I don't think anyone does."

He continues: "We are acutely aware that each pound we spend as a company reduces the amount returned to the farmers who own it. Many business leaders are facing a similar situation: the longer-term pay-off versus the short-term need. The sustainability agenda has heightened the demand for that balance. This requires a change in mindset from colleagues – one that we're working through together."

Westminster's so-called levelling-up agenda could at least help to equip workers in certain regions for a future beyond carbon-intensive industries. The Grantham Research Institute on Climate Change and the Environment has found that some of the nation's most deprived areas have a high proportion of jobs that will be affected by the shift to a low-carbon economy. Sectors and locations where jobs are particularly at risk are also where skills are in demand. This could be an opportunity in disguise, according to Molho.

"The decarbonisation of some of the UK's heavy industrial sites could lead to the creation of competitive low-carbon industrial hubs in areas such as Teesside, south Wales and Merseyside," he predicts. "We've already seen the offshore wind industry creating jobs in different parts of northern England, for instance. About one-third of the engineers working in this sector have come from the North Sea oil and gas industry."

One thing's for sure: doing little the close the skills gap certainly isn't an option for the government. If a significant number of workers, especially in marginal constituencies, were to suddenly find themselves unemployed, that would not make them happy voters. ●

ESG strategies are mission critical for sustainability

An international roundtable of C-suite thought leaders at global companies discuss how they are meeting the challenge of driving ESG criteria through the supply chain in pursuit of sustainability goals, including net zero targets

Jim McClelland

Environmental, social and governance (ESG) criteria are fast emerging as key indicators adopted by the investment community for measuring and tracking business sustainability. As a result, driving ESG through the supply chain has become a prime focus for responsible businesses keen to manage reputational risk in the face of increasing shareholder and activist scrutiny.

Brought together exclusively for this special report, the roundtable featured a diverse mix of perspectives drawn from across a range of industries and business sectors: recruitment and employment, healthcare, software, industrial sustainability, logistics and parcel delivery, and ethics and compliance.

While driving ESG in supply chains is doable and can be a dynamic force for positive change and growth, it is still far from easy. The panel debate addressed six key areas of challenge that are particularly difficult to tackle, but critical for success: governance, scope-three

emissions, 'walking the talk,' culture change, partnerships and compliance.

Governance: putting the 'G' in ESG

While all three ESG criteria are inevitably interrelated, for Karin Reiter, global head of ESG and sustainability, at Adecco Group, governance is probably still the bedrock on which sustainable value creation is built. She says: "It is the 'G' in ESG that really underpins the ability of a company to achieve its environmental and social goals. The 'G' enables us to thrive from an 'E' and an 'S' perspective."

Given the recent acceleration in ESG-driven legislation and regulation at a national level, but also a supranational level, there has been a specific focus on human rights due diligence across the value chain.

This has raised the stakes for risk, adds Reiter: "For companies, the risk of getting it wrong is increasingly reputational damage, compliance costs, also the potential loss of business, plus the question of your ability to attract talent, beyond the societal impact."

Tackling scope three is tough

When it comes to supply chain ESG challenges, though, they do not get much tougher than tackling scope-three emissions, suggests Emir Sassi, global head of procurement sustainability, at Novartis.

Greenhouse gas (GHG) emissions are broken down into three groups or 'scopes'. Scope one refers to direct emissions. Scope two refers to indirect emissions from the likes of purchased energy generation. It is scope three, however, that covers all other indirect emissions from the company value chain.

For a company like Novartis, which has a stated ambition to become



“Sustainability is a hot topic – great in theory, but hard in practice. The key is bringing together the business processes and systems with the wealth of data that is now available to help optimise supply chain visibility

carbon neutral by 2030, scope three is not just hard, but huge, explains Sassi: "Why is it tough? The size of scope three as part of our total GHG emissions is more than 90%. It is by far the biggest portion. What we emit in from our factories, offices and vehicles and from the energy we consume is less than 10%; all the rest sits with our supply chain. Scope three is tough because it's big and we don't manage it directly."

Needing to 'walk the talk' on digital

All too often, it seems organisations simply talk of 'going digital,' as if ESG data alone might somehow solve their supply chain issues. However, to 'walk the talk,' business needs formal structures in place, argues Richard Howells, vice-president, solution management for digital supply chain, at SAP: "Sustainability is a hot topic – great in theory, but hard in practice. The key is bringing together the business processes and systems with the wealth of data that is now available to help optimise supply chain visibility and drive business decisions around sustainability."

Earlier this year, SAP conducted a survey in conjunction with Oxford Economics of a thousand supply chain executives from around the world, across all industries. What the findings show is that while almost nine out of 10 (88%) firms have either created a clear mission statement around sustainability or are in the process of writing one; barely more than half (52%) have put these words into action to reduce shipping miles, for example.

When talking about scope-three emissions, the research revealed a drop down to little more than one in five (21%) respondents having complete visibility into their supply chain sourcing.

Mindsets matter for cultural change

Tools are vital for analytics around ESG. However, for embedding corporate values into best practice and supply chain behaviours, mindsets matter too. The challenge is not just knowing that company culture counts, but doing something about it, argues Patrick Fetzter, president and CEO, Castolin Eutectic: "Employees make decisions every day. You can put a lot of policies in place, but you cannot make each of these decisions yourself, and you cannot check them all the time. This is where culture comes in."

For Fetzter, sending the right signals on culture is not a one-off task. The tone needs to be set at the top, then developed day-to-day. This is why, for instance, Castolin Eutectic has signed up to the UN Global Compact, to really subscribe openly to its ESG commitments, Fetzter says: "How do you drive cultural change? It really starts with the mission and the purpose. Employees, customers, stakeholders need to understand what the company stands for and ESG and sustainability is part of this story."

Partnerships feed on open conversation

As a company that delivers around 650m parcels for the top 80% of retailers in

84%

of companies identified ethical risks within their supply chains

29%

Only 29% of companies explain how they plan on demonstrating progress in their modern slavery statements

Bolt Burdon Kemp, 2021

the UK, Hermes Parcelnet is itself a big player in a lot of company supply chains.

These supply chains are complicated, which is why collaboration is critical, says Nancy Hobhouse, head of ESG at Hermes: "Where we are with ESG, whether you are looking at the

'E', the 'S', or the 'G', the whole point of it is that you can't fix it all by yourself. Partnerships are really key. Unless you are working with both your suppliers and also your clients, you are never going to hit those targets."

Looking ahead, success in creating this collaborative ethos behind sustainable business will depend on better communication, she adds: "We need to have a more open and honest conversation across the entire value chain. And we need to make that conversation loud and intense; and have it with a lot of people, if we are to move forward together."

Ethics: the supply chain is not faceless

Ultimately, much of the challenge of driving ESG in supply chains comes down to translating the absolutes of ethics into the practicalities of compliance. This is never an easy task, but, fundamentally, you need to start with humanity, says Karen Alonardo, vice-president of ESG solutions, at Navex Global: "The bottom line is that the supply chain is not faceless. Sometimes we in companies, or just as consumers, tend to forget there are real people in the supply chain, bringing these products and materials to us."

For Alonardo, though, change is in the air – as evidenced by the emergence of

state legislation to address inequality and injustice in terms of working conditions and practices.

Both the UK Modern Slavery Act and the California Transparency in Supply Chain Act, for example, have been around for over five years now. Germany has also just passed into law its Supply Chain Due Diligence Act, which will come into effect in 2023.

With the spread of regulation, therefore, wrapping ethical components into compliance will become faster in future, especially if we harness the benefits of technology to establish baselines and start measuring progress. Alonardo adds: "The human element is a critical component, but also I am a technologist. Technology has a big play in this; bringing together ESG solutions that can help enable companies and their suppliers to meet some of these ethical challenges across the supply chain. From human rights and child labour, to conflict minerals and more, there is a still a lot of work to be done."

For more information visit navexglobal.com/eshg



How will supply chains change in the near future?



Karin Reiter, global head of ESG & sustainability, Adecco Group

“We are moving away from viewing people as a mere resource, so taking a truly human-centric approach that prioritises investments in people. People and the skills they offer need to be at the heart of the green transition. We need a new social contract, that ensures all forms of work across the value chain are secure and sustainable.”



Emir Sassi, global head of procurement sustainability, Novartis

“Five to 10 years can make a big difference. We all know the deadline of 2050 and the need to limit global warming to below 1.5C, but many still think we have 30 years to go to start acting on it. Reality is we haven't. The 'E' in ESG is not just an ambition; people need to understand the urgency. We can all succeed together. Everyone has a role to play.”



Richard Howells, vice-president, solution management for digital supply chain, SAP

“The reality is that whether we are talking about climate change, or the circular economy, or anything sustainability-related, our supply chains sit right in the middle – both as a major contributor to the problem and a focus for action. We need to leverage the power of the network, to provide improved visibility and collaboration, transparency and regulatory compliance, to hold everyone accountable to the high standards of ESG.”



Patrick Fetzter, president & CEO, Castolin Eutectic

“ESG offers a real competitive advantage and is becoming more and more important – not only for our investors and stakeholders, but also for our customers. Our customers are looking to us to be more ESG-compliant and to help them meet their targets. So, we are talking to our own suppliers and our customers are talking to us. This has momentum.”



Nancy Hobhouse, head of ESG, Hermes

“ESG is not going to be a nice-to-have; it is going to be an essential. At present, it might be a competitive advantage, but in five or 10 years it will be life of death for your business. You will not be able to get the finance you need, or the contracts you want, unless ESG is integrated into your business. Everyone needs to start now.”



Karen Alonardo, vice-president of ESG Solutions, Navex Global

“What I see in the future is that ESG becomes part of our DNA, operationally integrated, just common practice. With everyone doing the right things for the right reasons, we are building value creation across the whole supply chain. 'E', 'S' and 'G' are not individual silos. Compliance is a collaborative expression of what we believe will help drive things forward in an ethical manner, including all elements of ESG.”

INTERVIEW

Compassionate CEO: Paul Polman on repaying enterprise's overdue debt to society

Unilever's former boss wants to transform the private sector by persuading business leaders to create purpose-driven companies. He shares his vision of a 'net positive' commercial world

Heidi Vella

Paul Polman is a man on a mission. The core message he intends to spread is that business needs to be a force for good. It must nurture nature and give more back to society. Why? Because doing so is not only morally incumbent but also more beneficial for the bottom line.

"The Covid crisis has highlighted the relationships between biodiversity and human health, social inequality and the economy. The pandemic's enormous costs have demonstrated clearly that inaction is more expensive than action," he argues, adding that Earth Overshoot Day – the date each year on

which humanity has consumed more resources than the planet can replenish – was 29 July this year. "Every day after that point, we are stealing from future generations." Polman is surely the right person to rally the corporate community around the sustainability banner. For one thing, he has credibility.



“If businesses want to be around in the future, they need to take care of all the stakeholders that created value, not just their shareholders

Highlights from Paul Polman's CV

1979–2006	Various roles, Procter & Gamble
2006–09	CFO, Nestlé
2009–18	CEO, Unilever
2018–20	Chair, International Chamber of Commerce
2018–21	Chair, The B Team
2018–present	Vice-chair, United Nations Global Compact
2019–present	Chair, The Valuable 500
2019–present	Chair, Saïd Business School, University of Oxford
2021	Co-author, <i>Net Positive: how courageous companies thrive by giving more than they take</i>

Having served in senior positions at consumer giants Nestlé and Procter & Gamble, he became CEO of Unilever in 2009. During his decade-long stint at the helm, it became a purpose-driven company. Its achievements ranged from cutting the amount of greenhouse gas emitted by its manufacturing processes by 65% to attaining a gender-balanced workplace in which 51% of management roles were occupied by women.

Since stepping down from the company in 2019, Polman has sought to share his experience and spread his ethos. First, he founded Imagine, a social enterprise that works with CEOs and their senior leadership teams to “put purpose at the heart of their strategy”. Then he worked with sustainability guru Andrew Winston to write a book entitled *Net Positive: how courageous companies thrive by giving more than they take*, which was published in October.

Net Positive is a manifesto of sorts that outlines how businesses can “thrive by giving more than they take”.

Polman explains: “At Unilever, it wasn't enough to say: ‘Oh, we're feeding people.’ We also had to tackle problems such as obesity and deforestation. We believe that the business community should take ownership of its negative effects on society. This requires a mindset shift and strong leadership.”

Such a mentality is starting to permeate the private sector, he notes. Walmart has pledged to become a “regenerative” company, for instance, while cosmetics firm Natura has set targets to protect biodiversity in the Amazon and defend human rights in its supply chain. Clothes retailer H&M is

working to recycle the water it uses. But these early adopters are too few, Polman stresses. “It needs all of us.”

As his book explains, a company needs to plan for the long term if it's to go beyond CSR box-ticking and actually reverse its negative impact on the planet. This entails setting genuine goals, preferably based on scientifically backed targets; establishing a programme of giving back (Unilever has donated millions of its hygiene products to Unicef, for instance); and measuring not only financial performance, but also aspects such as employee wellbeing or, indeed, “anything the company values and wants to change”.

But most firms are still hampered by short-termism and a myopic focus on shareholder value, which often contributes to their decline, according to Polman, who points out that the average lifespan of a company listed on the S&P500 has fallen to a mere 17 years.

“A longer-term approach enables companies to grow, create, reduce poverty and drive a better quality of life,” he says. “If businesses want to be around in the future, they need to take care of all the stakeholders that created value, not just their shareholders.”

At Unilever, he stopped giving guidance (a company's estimate to shareholders of its upcoming earnings), ended quarterly reporting and shifted to a longer-term compensation scheme. These moves “removed constraints” and enabled the corporate communications to become more strategic, Polman says, although he notes that entrenched attitudes around the boardroom can hinder change.

“On a near-daily basis, I hear about short-term pressure coming from boards. They are there to protect the long-term viability of a company, not to optimise the returns every quarter for a few shareholders,” he argues.

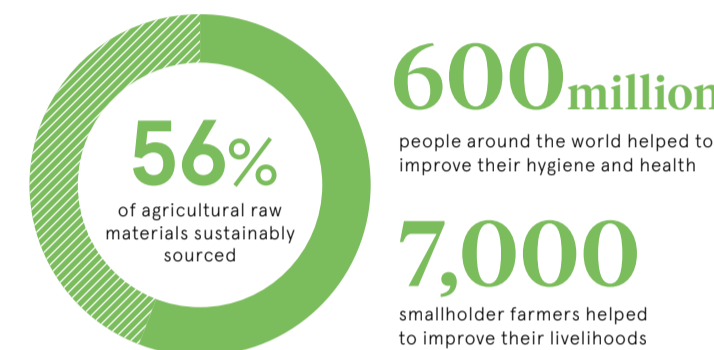
Every business needs to grow, of course. But it is possible for a firm to do so without increasing its environmental footprint. Innovation is the key, says Polman, who notes that Unilever “created a near-300% shareholder return, growing from \$33bn to \$55bn, while also reducing its material usage by between 50% and 60%” while he was at the helm.

There is a large body of research evidence which indicates that a long-termist, multi-stakeholder approach in business leads to superior performance, yet leaders still have trouble making the case for it. Take the former chair and CEO of Danone, Emmanuel Faber, for instance. He had transformed the business into a purpose-driven enterprise and was investing in regenerative agriculture, yet was ousted in March by impatient shareholders, who had become dissatisfied with Danone's progress against conventional yardsticks.

Polman acknowledges how hard it can be to challenge the orthodox and accepts that it's impossible to please everyone.

“If you run a company to satisfy every single shareholder, you will

KEY RESULTS FROM POLMAN'S 10 YEARS AT UNILEVER



Unilever, 2018

run it into the ground and you'll become schizophrenic,” he says. “It is better to work proactively to attract the right investors – those that are already aligned with your business strategy.”

Central to the ethos that he and Winston propound in *Net Positive* is an understanding that CEOs cannot achieve much acting in isolation. They need to establish strong partnerships with a range of stakeholders to get things done.

“This is difficult. It takes courage to set big targets and to work with others when you aren't totally in charge,” Polman says. “It is tough to change systems, especially given the current political environment. But, where do I see this happening, I see miracles.”

One successful example of collective action he cites was the statement of support for the Cerrado manifesto, which was written in 2017 by more than 60 Brazilian NGOs in a bid to protect biodiversity in the country's ecologically important Cerrado region. The statement, which called on soybean traders to divest from the commodity wherever its production caused deforestation in the Cerrado (or face sanctions), attracted 160 corporate signatories, including Tesco and McDonald's.

Such partnerships can also be helpful when companies face adversity. For instance, when 3G, the owner of Kraft Heinz, attempted a hostile takeover of Unilever in 2017, leaders at Greenpeace UK and the IUF, a global federation of trade unions, were among those who publicly opposed the bid.

Polman stresses that purpose-driven businesses should always

speak out when they see injustices in the world, arguing that “if you're quiet, you're complicit”. But he accepts that the private sector can only do so much.

Governments also need to stimulate innovation, he adds, yet “they often push companies in the other direction. For instance, a lot of spending earmarked for the green economy is going to fossil fuels.”

Polman observes that milestone events such as the United Nations' COP26 conference in Glasgow are integral to “rallying minds”, but he believes that it would be naive to expect all governments to agree on the measures they must take to solve the climate crisis.

“The world is too complicated for that,” Polman says. “What businesses can do is step up and help to de-risk that political process by, for instance, supporting climate action and carbon taxes. We need to give governments the courage to set more ambitious targets.”

If business leaders truly want to live in a time when people exist in harmony with the planet and each other, when resources are preserved for future generations, when the air is clean and jobs are green, “what other choice is there but to act?” he asks.

“That is the net-positive world. It's not a naive concept – we can achieve it. The production of the Covid-19 vaccines is an example of that. We just need more people to think this way and drive us in that direction. I want students to say: ‘I want to go to a net-positive university.’ I want CEOs to say: ‘I want to make my company net positive.’ And I want people to say: ‘I want to work for a net-positive company.’”

Q&A

Tackling food waste using innovative technology

Food waste is a major issue but digital store assistants that work to reduce the problem can boost social, environmental and financial bottom lines, and enable circular economies, says **Peter Evans**, CEO of sustainability supply chain technology company Orderly



Q What exactly does Orderly do?

A We're a 13-year-old, pioneering, sustainability-first supply chain technology company based in Derby. We improve digital order and stock management tools that reduce food waste for UK businesses, while increasing their profit. Businesses worldwide use our solutions, with Orderly Score especially popular. It acts as a digital store assistant, using artificial intelligence and data sources, including point-of-sale, labour, inventory and CCTV, to offer real-time, store-level insights for food and beverage operators so they can make more sustainable and profitable decisions.

Getting these insights to the right staff member at the right time empowers a business's sustainability mission. It helps people understand that little decisions every day can make a massive difference overall. Think about the carbon savings coffee chains with tens of thousands of stores could make if they didn't buy that extra bottle of milk for every location that has gone off by the end of the day.

Q How much of an issue is food waste?

A Food waste is arguably the dumbest problem globally: why would you buy more food than you need as an enterprise, never mind a consumer? There are already tools to stop, for example, hundreds of sandwiches ending up in the bin at the end of the day at a supermarket. Orderly is taking that further and is perfectly placed to help achieve the United Nations' Sustainable Development Goal 12.3: to halve food waste by 2030.

The economic fallout from the coronavirus pandemic will plunge an additional half a billion people – 8% of the global population – into poverty. This figure is on top of the 700 million people (10%) already living in extreme poverty without access to

the most basic needs, including health, education, water and sanitation.

Q How wasteful is the UK food and beverage industry?

A The UK has been called a global leader in tackling food waste, with total food waste levels falling by 480,000 tonnes between 2015 and 2018, according to WRAP – a reduction of 7% per person. While consumer campaigns have had an impact, much of the change is down to some serious pledges from the government, which has a goal to reduce food waste by 20% by 2025. While UK households still waste 4.5 million tonnes of food every year, large businesses have been tasked with setting a food waste reduction target for their UK operations. At Orderly, we use various data sources to show how customers' supply chains are working – for better or worse. A business might think it is doing well because it has halved food waste in two years, but that could still be five times worse than the average.

Q Are business leaders' mindsets around food waste changing?

A For sure. We started Orderly Score about two years ago: as soon as we engage with leaders, they understand the many benefits of having real-time insights at their fingertips. Connecting companies, supply chains and people is now critical. Our insights, which are gathered from a wide range of customer data sources, reveal what's really happening. Connecting supply chains to enable circular economies is increasingly essential and facilitated by Orderly's solutions. For example, if some milk at the supermarket is about to expire, it can be moved to a restaurant using our platform. Before the pandemic, this was completely unheard of – no one even thought about it. But things have changed.

“Getting these insights to the right staff member at the right time empowers a business's sustainability mission

Q You moved to the CEO role in January 2020 – what have you learned?

A There have been massive changes and shocks in supply chains, which are ongoing. At the start of the pandemic, it made my life as CEO of a service provider very difficult because it was our job to keep the wheels turning. When lots of quick-service retailers went quiet due to the lockdowns worldwide, grocery sales went through the ceiling. With Morrisons, in only six days we managed to unlock food that could potentially have gone to waste in warehouses and launch food boxes for the NHS, people who were shielding and Morrisons customers. This agility created another route to market – direct to consumers' doors – and may not have been possible to implement so quickly with a less responsive tech supplier. Having a smart strategic partner with a sustainability-first mindset will enable businesses to rebuild quickly after the pandemic and better manage the planet's resources.

To find out more about how Orderly can help you tackle supply chain waste, visit orderly.io



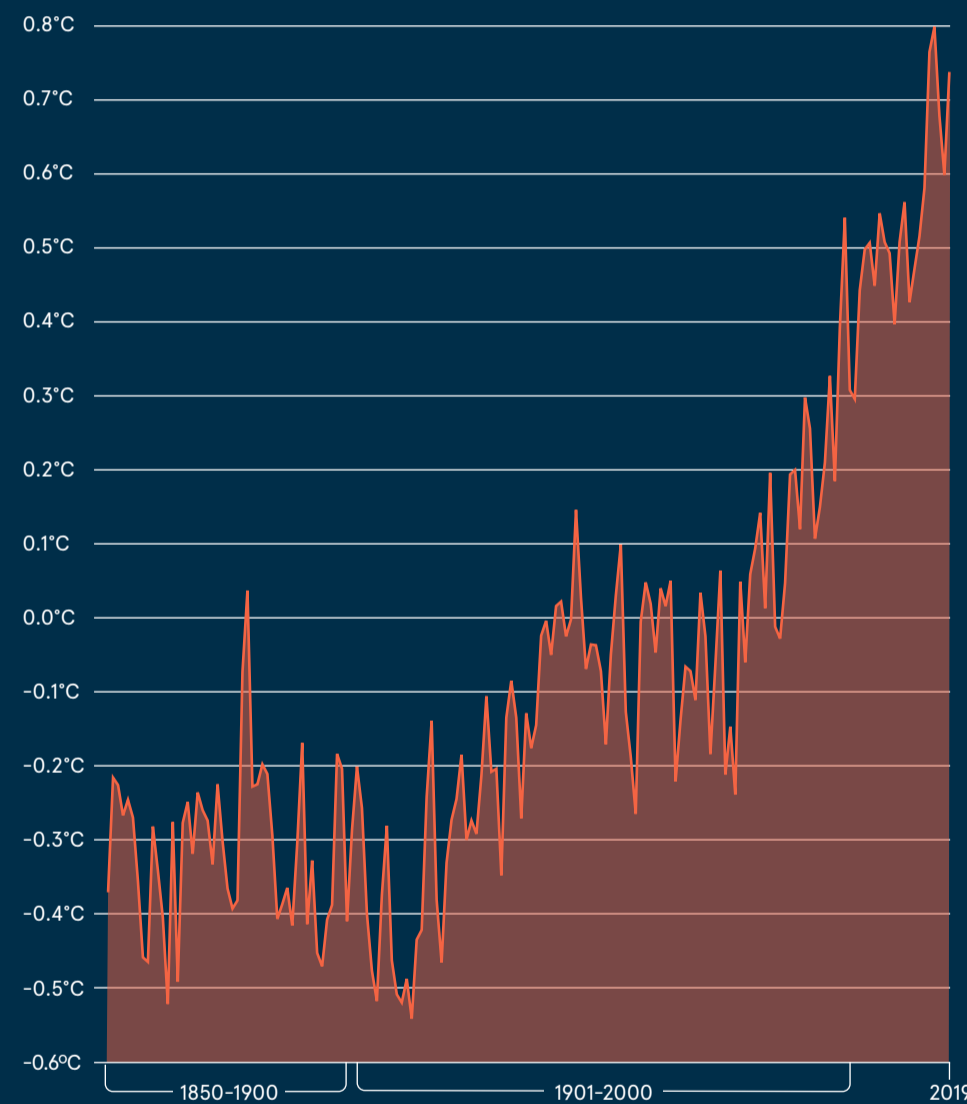
COP26 AND GLOBAL EMISSIONS

The United Nations' 2015 Paris accord aimed to mitigate the effects of climate change by restricting global increases in temperature to no more than 1.5°C above pre-industrial levels. Yet the planet is already at 1.2°C of warming, with very few countries enacting policies that will limit the increase. The UN's COP26 conference in Glasgow is seeking to find a route towards net-zero emissions and to set more stringent targets that could help to mitigate the problem

GLOBAL AVERAGE TEMPERATURES HAVE INCREASED BY MORE THAN 1°C SINCE PRE-INDUSTRIAL TIMES

Climate Watch, World Resources Institute, 2020

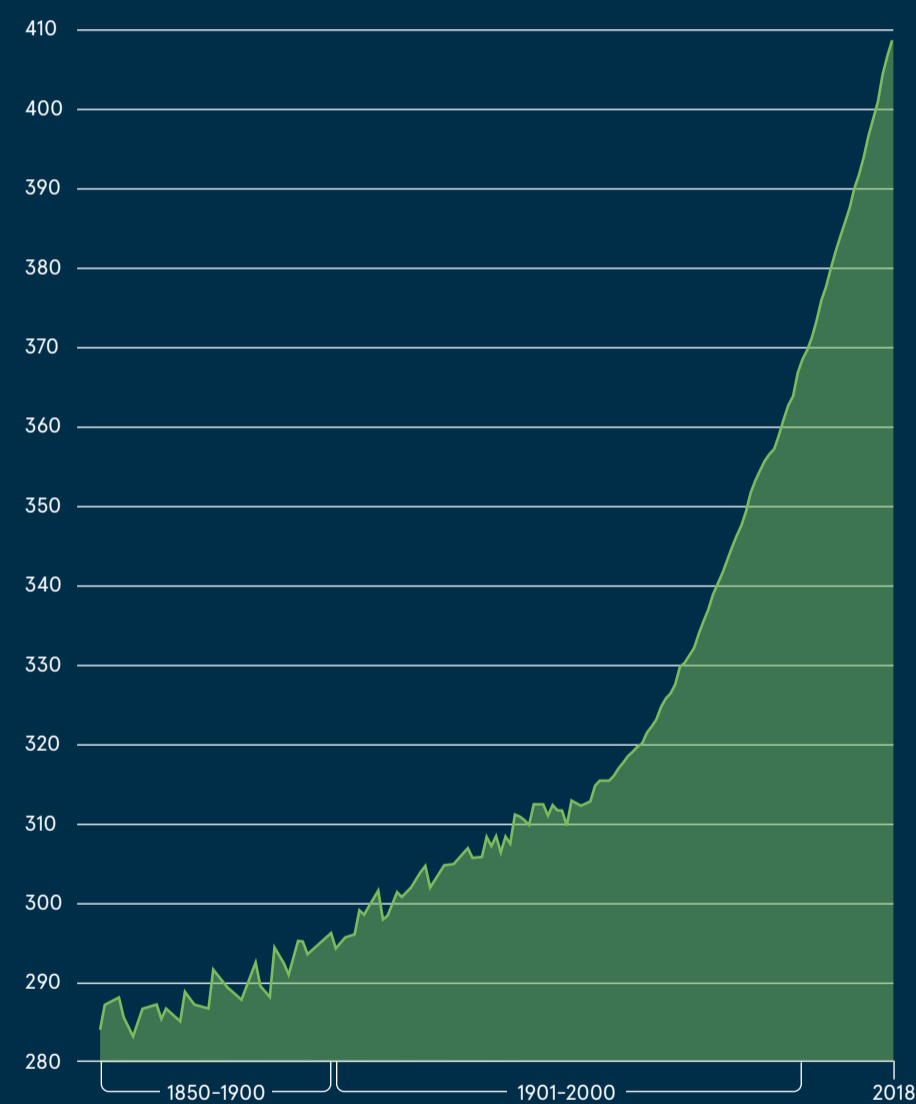
Global average land-sea temperature anomaly relative to the 1961-90 average temperature



ATMOSPHERIC CONCENTRATIONS OF CARBON DIOXIDE ARE STILL RISING

European Project for Ice Coring in Antarctica, 2015; National Oceanic and Atmospheric Administration, 2018

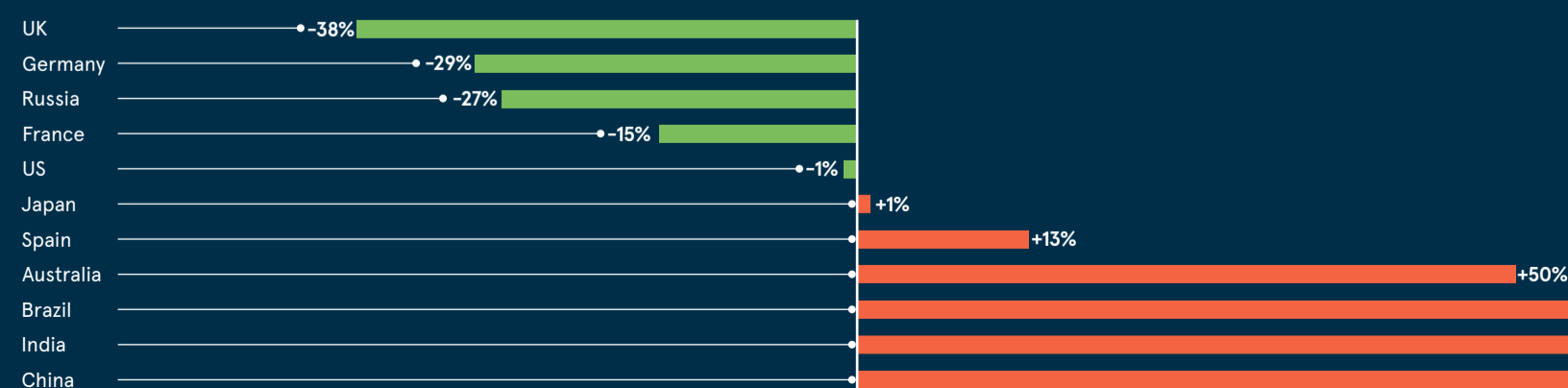
Global average atmospheric concentration of CO₂ (parts per million)



THERE HAVE BEEN VARYING LEVELS OF SUCCESS IN CUTTING GREENHOUSE GAS EMISSIONS AROUND THE WORLD

International Energy Agency, 2020

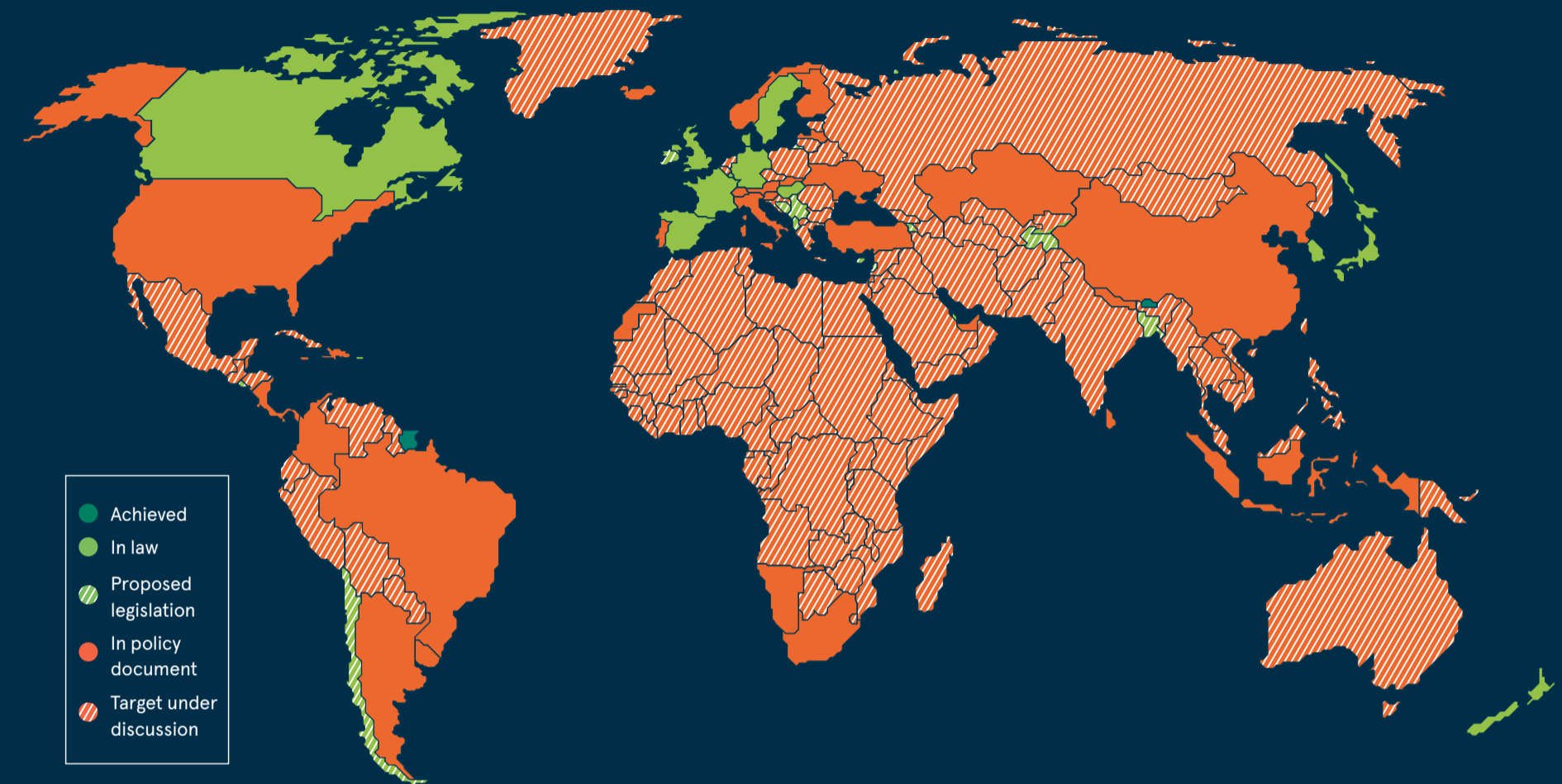
Change in CO₂ emissions in selected countries from 1990 to 2019



TRACKING COUNTRIES' NET-ZERO EMISSIONS PLEDGES

Energy and Climate Intelligence Unit, 2021

Countries grouped by their commitment to achieve net-zero CO₂ emissions



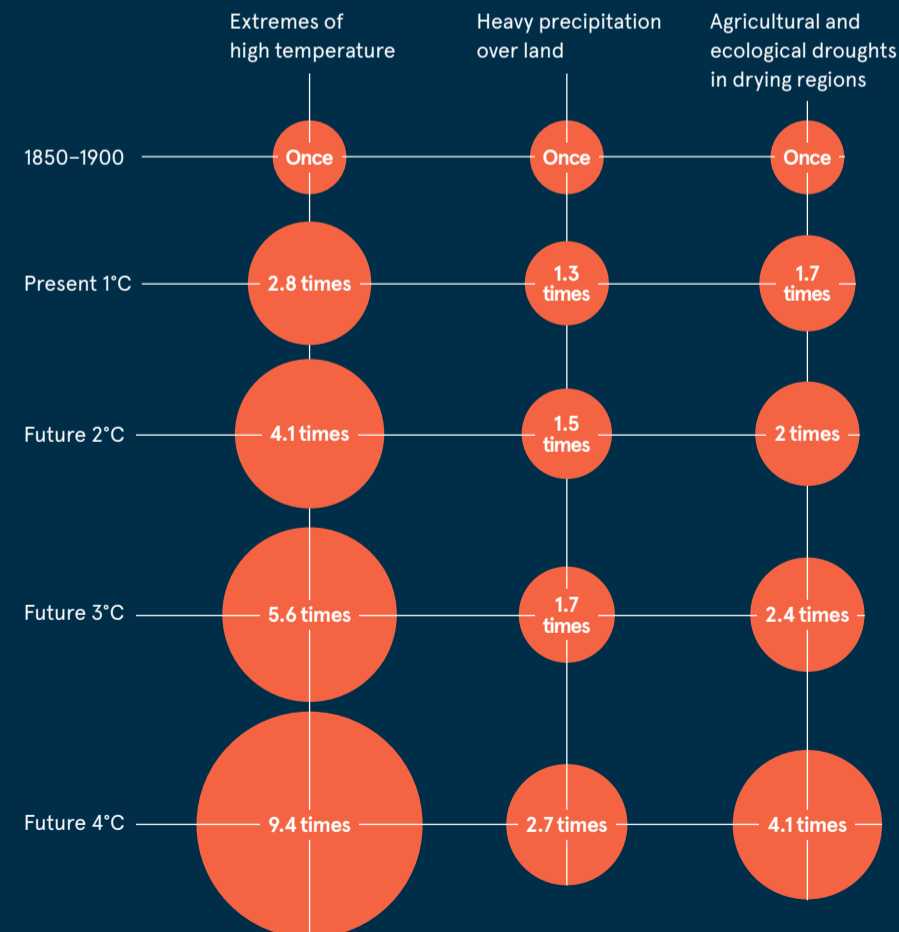
+370%

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REDUCING GLOBAL WARMING IS IMPORTANT FOR LIMITING EXTREME WEATHER EVENTS

UN Intergovernmental Panel on Climate Change, 2021

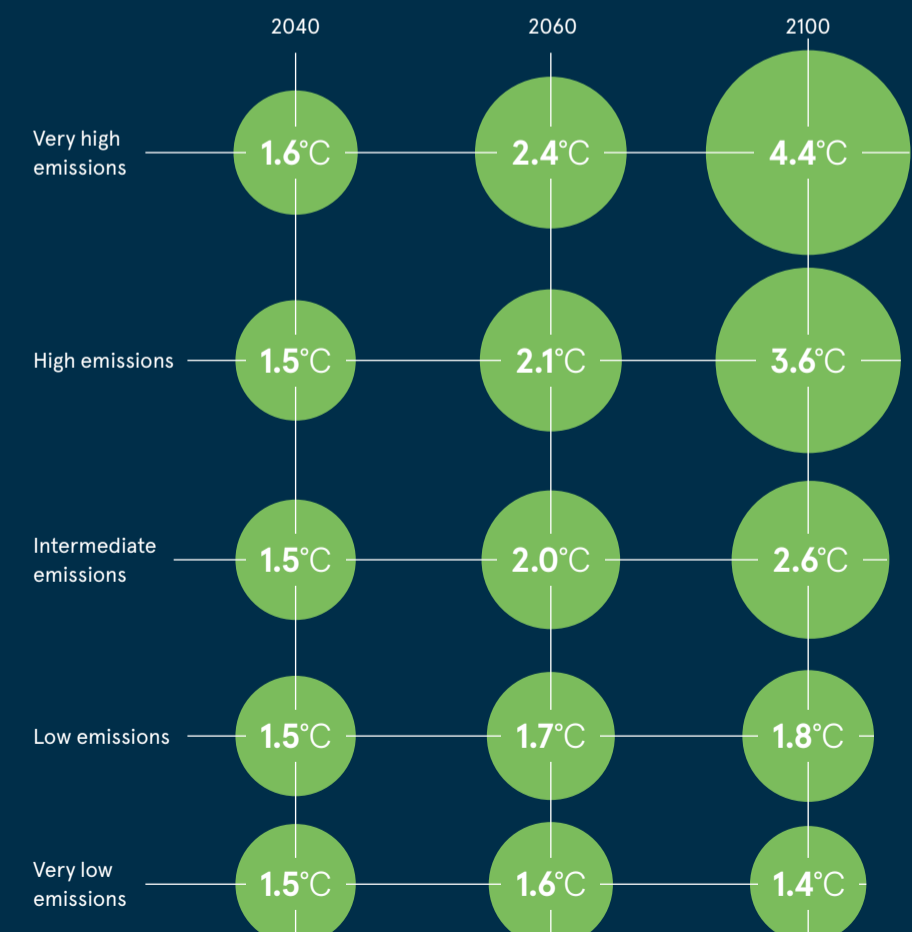
Projected changes in 10-year extreme weather with every additional increment of global warming



ACTING ON CARBON EMISSIONS CAN REDUCE AND EVEN REVERSE LONG-TERM GLOBAL WARMING

Epic4, 2015; NOAA, 2018

Best estimates of potential future global warming based on five scenarios





Anton Petrus via Getty Images

GEOENGINEERING

A moment for reflection?

Forecasts indicate that the planet is heading for disastrous levels of global warming. It might be time to accept that controversial solar engineering methods to solve the problem are a necessary evil

Mark Piesing

Most people recognise that we need to cut our greenhouse gas emissions to decelerate global warming. The United Nations' Intergovernmental Panel on Climate Change (IPCC) recommends that the world's temperature increase be kept to no more than 1.5°C above pre-industrial levels, yet we are currently on course for a much warmer future. A projection in July by Our World in Data indicates that the Earth is likely to heat up by between 2.7°C and 3.1°C by the year 2100 if existing climate policies remain in place. If countries honour their latest pledges on cutting emissions, the figure could be reduced to 2.4°C, scientists predict, but this figure is clearly still much higher than the IPCC recommends. This is where geoengineering could play a role. Many people see this large-scale manipulation of climate systems as the only effective solution to the global warming problem, yet it comes with huge problems of its own. Tim Kruger is manager of the University of Oxford's geoengineering programme. He observes that Eli Kintisch, author of the 2010 book *Hack the Planet: science's best hope - or worst nightmare - for averting climate catastrophe* "called geoengineering

a bad idea whose time has come. It's not something that people would want to try immediately. It has all sorts of potential side effects, but it is something we need to consider. If we don't, we're not taking climate change seriously." One of the main categories of geoengineering is solar engineering, also known as solar radiation modification (SRM). This involves reflecting sunlight away from the Earth, usually by spraying chemicals into the atmosphere in aerosol form. There has been little field research into SRM so far. In 2009, Russian scientists conducted what's thought to be the first experiment when they mounted aerosol generators on a helicopter and sprayed particles 200m into the air. They claim that this cut the amount of sunlight reaching ground level. There was another test in 2011, but several have since failed to make it off the launchpad. For instance, a UK research project called stratospheric particle injection for climate engineering (Spice) planned to pump particles up a pipe to a high-altitude balloon that would then scatter these into the atmosphere. But it was scrapped in 2012 following a public backlash.

“Geoengineering solutions are tools in our toolbox. As each week passes, we get closer to the inevitability of having to use them

George Monbiot, one of the UK's most prominent climate campaigners, classes geoengineering proposals into two groups: those (such as launching mirrors into space) that are "safe, expensive and totally useless; and those that are cheap, effective and extremely dangerous. At this end is pouring sulphur compounds into the atmosphere. It makes a lot more sense to be growing trees."

Such views have left most policymakers reluctant to publicly voice support for any kind of SRM activity, which encompasses methods other than the Pinatubo option. These include cloud thinning, which modifies high-altitude clouds to allow more heat to escape, and brightening, which adds a salt mist to low clouds over the sea to make them more reflective. And, back down at sea level, it has even been proposed that a layer of reflective glass powder could be poured over Arctic ice to protect it from the Sun's rays.

Yet solar engineering will be necessary, according to Hugh Hunt, professor of engineering dynamics and vibration at the University of Cambridge and a co-investigator on the ill-fated Spice project.

"Geoengineering solutions - whether they're capturing CO₂ from the atmosphere or reflecting sunlight - are tools in our toolbox. As each week passes, we get closer to the inevitability of having to use them," he argues.

Research into solar engineering is ongoing. In March, the US National Academies of Sciences, Engineering and Medicine (NASEM) surprised many observers by recommending that the White House spend up to \$200m (£145m) on a new SRM programme. While there are no signs yet

of such an investment, this development has heightened activists' fears that the technology's use will be normalised - and that its early adoption by one country could even stoke up geopolitical tensions.

"The risk is that the research they are doing and the experiments they want to run, especially under the vastly expanded programme proposed by the NASEM, will inevitably develop the technology for deployment," says Raymond Pierrehumbert, professor of physics at the University of Oxford. "As we did with the hydrogen bomb, we know the technology is feasible, but many of our questions about it can be answered only by deploying it on a near-full scale. That is why the research is dangerous."

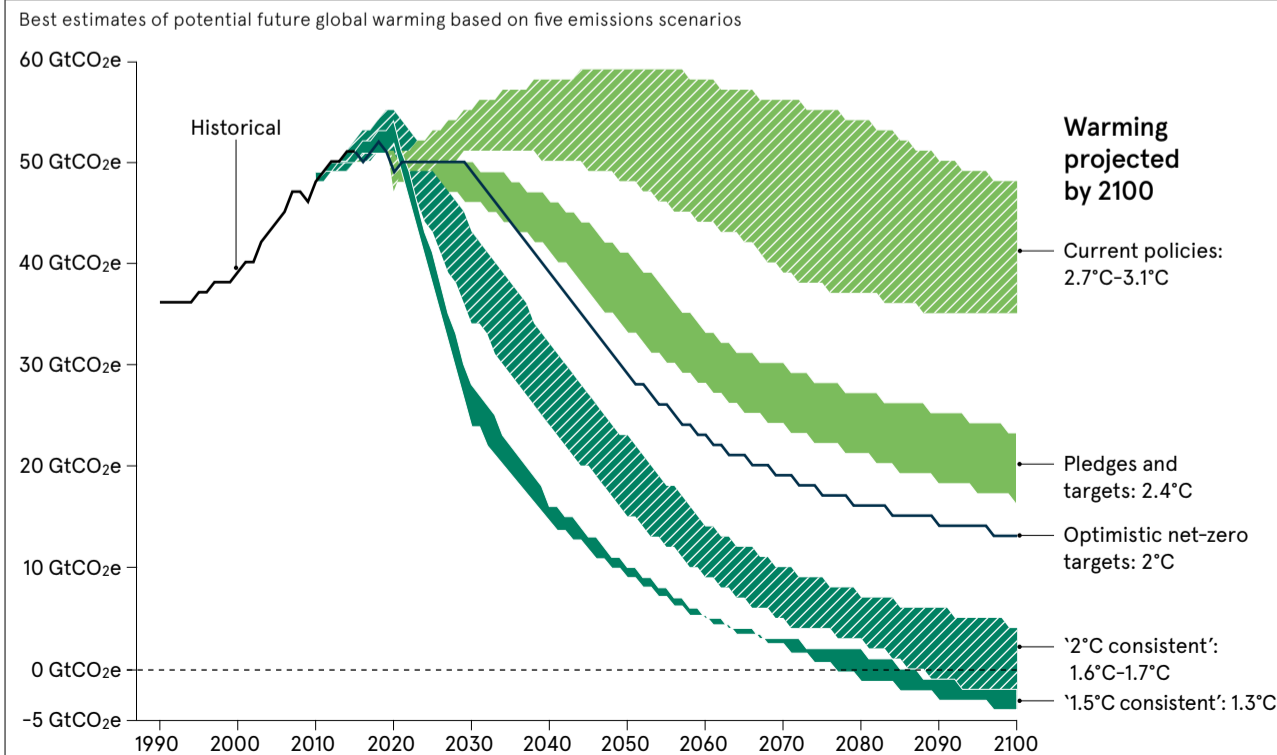
There are also legitimate concerns about the motives of some of the groups seeking to push geoengineering up the agenda. "It's certainly true that there are people on the right of the political spectrum who believe that SRM is the way to avoid having to decarbonise the economy," Kruger notes.

Indeed, Newt Gingrich, a former Republican speaker of the House of Representatives and confidant of Donald Trump, proclaimed in 2008: "We would have an option to address global warming by rewarding scientific innovation. Bring on American ingenuity. Stop the green pig."

Ultimately, even though geoengineering poses serious risks, business leaders need to ensure that there's further research in the field and effective governance. But such investments must act in conjunction with rapid CO₂ emission reductions. Otherwise, there may not be much of an economy left to save. ●

MORE EXTREME MEASURES ON EMISSIONS MAY BE NEEDED TO AVERT CLIMATE DISASTER

Climate Action Tracker, 2021



Is COP26 our last chance to save the planet?

Alix Chambris, vice-president of global public affairs and sustainability at Viessmann, explains how people, technology, financing and a skilled labour force are fundamental to the green transition

Climate change is clearly an existential threat to humanity. Through greenhouse gas emissions, we have increased the average temperature of the planet by 1.2°C. The current climate policies adopted across the globe have put us on a path to a 2.7°C increase. Clearly the current policies are not sufficient and we have to do more.

This makes COP26 particularly important. Why? Because according to the Paris agreement, all countries must tighten their climate commitments and roadmaps every five years as part of their nationally determined contributions (NDC). It is these combined roadmaps that determine whether we achieve the goals of the Paris agreement or not. COP26 is our best chance this decade to motivate countries, companies and citizens to play their part in ensuring that our planet is both liveable and affordable for us, our children and future generations.

Reducing energy demand and transitioning to green energy sources in buildings and homes is fundamental to the achievement of climate goals. Buildings are responsible for 28% of CO₂ emissions, while building materials and construction are responsible for an additional 10%.

Yet, the majority of climate roadmaps - the NDCs mentioned previously - do not specify decarbonisation targets for the sector or for the greening of heating energy carriers.

As a provider of heating and cooling solutions, Viessmann has a central role to play in accelerating the transformation towards a net-zero building environment. This is the reason behind our full commitment to COP. We are sending a wake-up call to policy makers: it is a matter of urgency that we give special consideration to buildings. We are also, of course, playing our part. We have just committed to reducing our own absolute emissions by 75% by 2030 compared to 2005 levels.

The key to achieving this net zero future can be summarised in four words: people, technology, finance and labour.

People

A net-zero building environment is first and foremost a fantastic opportunity to improve the lives and health of millions of people. In the wake of the coronavirus pandemic, people are much more sensitive to the state of their homes - how light, noise levels, air quality, temperature or mould affect their health and wellbeing.

The awareness and willingness to invest in better homes has never been higher. With the right policy framework, we can create the investment certainty for companies to meet that demand. Affordability and inclusivity are critical to secure the buy-in to the energy transition.

The city of Liverpool, for example, is running a healthy homes programme that sets a benchmark for transformational policies: linking health care with home renovation programmes. Prosumer models, such as self-consumption models around photovoltaics, heat pumps and electric storage, will also help to involve people and even create a new sense of cohesion within energy communities. There are many opportunities.

Technology

Climate solutions already exist to deliver a net zero building environment: heat pumps, renewable-ready boilers, hybrid heating systems using green electricity and green gases, solar photovoltaic, solar thermal and district heating. Success will build on two trends: the increased electrification of heating systems fed by green electricity and the supply of green fuels, such as hydrogen.



“COP26 is our best chance this decade to motivate countries, companies and citizens to play their part in ensuring that our planet is both liveable and affordable for us, our children and future generations

Hydrogen in home heating will be instrumental in dealing with the high seasonality of home heating demand, particularly in winter when there is increased demand but often little sun or wind. In short, it will reduce energy systems costs, secure energy supply and add one more option to decarbonise heating in buildings, even if it is used in smaller quantities.

Smart homes will also help optimise energy consumption. For example when someone leaves their home, their intelligent home energy management system could reduce energy usage until they return or decide to heat their home using off-peak power. A home heating system could dynamically choose from a range of energy tariffs and therefore save the consumer money, while maintaining the same level of comfort for them and their family and ensuring the lowest level of CO₂ emissions.

Financing

The largest financing gap for the achievement of climate goals lies in buildings. To look at it another way, there is a huge market for the financing community. The value of the European mortgage market is equal to more than half the EU's GDP. Most energy renovation happens approximately one to three years after purchasing, which shows how much of a game-changing role banks can play in increasing energy-renovation rates.

There is a huge potential to grasp, by maximising synergies between the

mortgage market and the construction and energy renovation markets. Public subsidies are especially effective in accelerating the modernisation of heating systems.

Labour

Climate policies can create more and higher qualified jobs. However, skilled installers, plumbers and tradespeople are already in short supply. We need a strong labour pact to attract new professionals and train people at scale - a clear priority for policy makers and industry. As an equipment manufacturer, we help to alleviate the pressures on labour by providing plug and play modernisation solutions that reduce installation time and complexity. At the Viessmann Academy, we also train more than 130,000 people per year.

With the support of people, technology, financing and a skilled labour force, we can embrace the transition to cleaner technologies. That will lead to a healthier world that not only can be proud to hand to our children and future generations, but that we can live in safely and affordably today.

To find out more please visit viessmann.co.uk/lastchance



PROCUREMENT

Scope creep: getting to grips with supply chain emissions

The largest proportion of the average company's carbon footprint is imposed by its suppliers. How should firms go about cutting CO₂ emissions that are beyond their direct control?

Maria Highland

Until recently, organisations have focused on their own operations in the effort to cut their greenhouse gas emissions, yet it's becoming abundantly clear that the vast majority of the average firm's carbon footprint is imposed in its supply chain.

Research from Carbon Tracker, a think-tank studying the effects of

\$120bn

costs faced by companies from environmental risks in their supply chains by 2026

11.4x

higher greenhouse gas emissions in the supply chain than from operational emissions

619 million tonnes

of CO₂ emissions cut by suppliers in 2020

37%

of suppliers are engaging their own suppliers to cut emissions

Carbon Disclosure Project, 2021

climate change on the financial markets, suggests that between 80% and 97% of a company's total carbon footprint lies in the scope-three category. This encompasses the CO₂ emissions of its suppliers and also of downstream activities such as the consumption of its products and their end-of-life treatment. Moreover, the *Net-Zero Challenge* report published by the World Economic Forum and the Boston Consulting Group in January concluded that the supply chains of some consumer-facing industries are responsible for more than half of all global greenhouse gas emissions.

As Tyler Chaffo, manager of global sustainability at packaging company Avery Dennison, observes: "It's very challenging to achieve net zero if you're failing to quantify your biggest contributor."

Sanjay Sadarangani, global head of sustainability, global trade and receivables finance at HSBC, agrees. He notes that the public's improving awareness of climate change and its causes is putting ever-increasing pressure on governments, companies and the financial sector to take remedial action.

Likewise, eco-conscious consumers "want to make informed choices about the clothes they wear and the food they consume" he adds. "Suppliers that don't put in measures to address all their CO₂ emissions will see diminishing demand for their goods and services, either because consumers won't accept these or because of regulations such as the UK's ban on the sale of new petrol and diesel vehicles from 2030."

The costs of inaction are rising, adds Alex Saric, chief marketing officer at Ivalua, a provider of supply management software. "If organisations can't assess their suppliers'



“Improving sustainability and achieving real change is not simply about choosing suppliers with more sustainable practices. It's also about collaborating with them to achieve continuous improvements

environmental impact, they may lose out to greener competitors, face reputational damage or risk non-compliance as new regulations come into force," he says.

Chaffo points to an estimate in February by the Carbon Disclosure Project (CDP) that "companies are facing up to \$120bn (£87bn) in costs from environmental risks in their supply chains within the next five years. The risks for a company also apply to its suppliers, as these all roll up the value chain. Suppliers face the potential of lost revenue, regulatory pressure and enterprise risk for non-compliance. Suppliers and companies therefore need to collaborate to solve scope-three challenges."

The first step in this process is to measure emissions and identify areas for improvement. This can be done using established standards such as the Greenhouse Gas (GHG) Protocol or by working with organisations such as the CDP through its supply chain programmes.

Sadarangani notes that the GHG Protocol is the only internationally accepted method for a company to account for its indirect emissions. This recommends that a firm "identifies which scope-three activities are expected to produce the most significant emissions, offer the most significant reduction opportunities and be most relevant to its business goals".

American Express is setting official targets and measurements in aid of its carbon-neutrality plan, which covers scope-three emissions, says its head of corporate social responsibility, Madge Thomas. These will be calculated in alignment with the GHG Protocol's standard for corporate value chain accounting and

reporting. The company's calculations are independently checked according to the ISO 14064-3 standard, which specifies the requirements for third-party verifiers.

Thomas reports that AmEx will measure and address indirect CO₂ emissions in categories including: commuting and other business travel by employees; purchased goods and services; capital goods; fuel and energy-related activities; the use of sold products; and the end-of-life treatment of those products.

"We're also planning to work with suppliers to invite them to track, reduce and eventually neutralise their operational greenhouse gas emissions," she adds.

Saric notes that, if organisations are to effectively counter the threat of climate change and meet the public's increasing expectations about sustainable business, measuring the impact of both their immediate and sub-tier suppliers is a must.

"Improving sustainability and achieving real change is not simply about choosing suppliers with more sustainable practices. It's also about collaborating with them to achieve continuous improvements," he says. "Organisations must work with suppliers in several tiers of the chain to find innovative ways to reduce their scope-three emissions."

Businesses also need to measure their CO₂ emissions regularly, Saric argues. If they don't make it a continuous process, they won't be able to track their footprint accurately enough over time and work effectively with suppliers to reduce it. "This collaboration is vital in benefiting business and the planet," he says. "By establishing an ongoing dialogue with suppliers, companies will be able to identify new areas of innovation, improve efficiency and maximise their growth."

Technology can help when it comes to improving cooperation up the value chain, says Sadarangani, who notes that several organisations have started using applications that enable the collection and analysis of data relating to their suppliers' ESG performance. These tools feature self-assessment surveys for suppliers, which are required to upload documentary evidence to support their claims. The technology can also benchmark a supplier's performance

against that of peers in comparable industries, enabling users to identify areas where significant improvements are achievable.

Chaffo believes that technology will play a key role in addressing emissions in the supply chain. This starts with an "initial quantification of an enterprise's scope-three emissions but also includes identifying hot spots for reduction and, ultimately, implementing solutions. Now that we can track at an item level the carbon footprint of a product as it moves through the supply chain, we're able to give brands and retailers a more accurate picture of their scope-three emissions." ●

Scope classifications – an explainer

Scope-one emissions

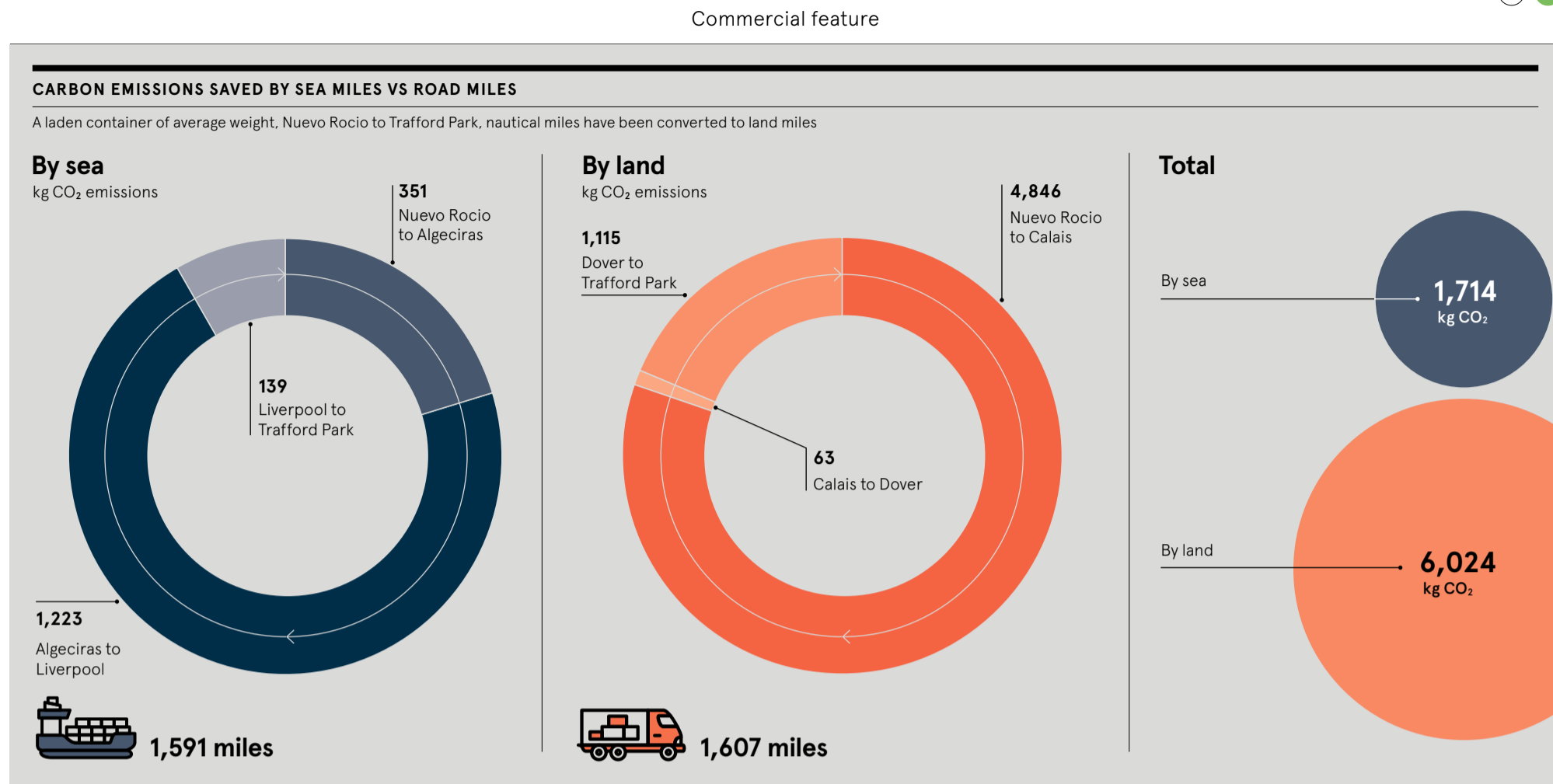
Scope one accounts for the direct greenhouse gas emissions produced by an organisation, such as those created by burning fuel, using combustion-engined vehicles and operating industrial processes.

Scope-two emissions

Scope two covers indirect emissions, often associated with electricity or heating that has been purchased from an energy supplier.

Scope-three emissions

Scope three refers to all the greenhouse gas emissions created up and down the value chain of an organisation. For many businesses, this is where most their emissions will be found. Upstream activities include emissions created during transport and distribution, commuting, waste and any emissions from the production of goods and services purchased by the company, such as packaging. Downstream activities cover the emissions created through the use of its product and its end-of-life treatment, as well as those of any leased assets, franchises or investments.



Ports are a gamechanger for global supply chain emissions

With the majority of the world's traded goods carried by sea, reducing emissions at ports and docks will be key to hitting net zero targets and averting climate disaster

An astonishing 95% of the world's traded goods are carried by sea and maritime trade is expected to triple over the next 30 years. In the UK, the vast majority of the products we consume arrive at a British mooring in a ship. This means that ports, as businesses, have a crucial role to play in facilitating the race to net zero carbon emissions.

Even though ports are not big emitters, freight accounts for 40% of global transport emissions. This is set to increase by 22% by 2050, meaning something needs to be done. It's why ports around the UK – and globally – are taking the lead, building sustainability into their operations and leading the logistics industry in a shift towards decarbonisation.

"We are a key facilitator of goods moving into the British Isles and provide key hubs for supply chains. We are trying to do a lot to reduce emissions, but also work alongside shipping lines and supply chain partners so they can become greener. But it is a journey and there is a lot more to be done," explains Lewis McIntyre, managing director of port services at Peel

Ports Group, the UK's second largest port operator which runs seven ports and terminals across the British Isles.

Work has already begun. At many ports, dockside electric cranes work on renewable power, while software ensures container movements are optimised to save energy and electric vehicles make up nearly 50% of the fleet. Instead of using diesel when ships idle in docks, Peel Ports is planning how these can plug into the ports' electric supply – a process called cold ironing. Dock levels are also topped up with rainwater from warehouse rooftops, saving vital energy pumping.

"We have a vision. We already know the destination," says McIntyre. "In the future, a ship will dock using cleaner fuels, such as ammonia, and offload container cranes electrically, while the plant equipment will use hydrogen. You then distribute cargo along electric rail lines to warehouses that also use green electricity. The final mile distribution centres then use hydrogen-automated trucks and they can deliver at night to reduce congestion."

Right now, the primary fuel for UK ports is diesel, yet the government is

removing the red diesel subsidy in April next year. This will double the cost of fuel for ports and highlights the need for change. Recent energy price volatility is also triggering further impetus to transition to renewables and do so at speed in order to remain competitive.

"Evolving legislation means we have to accelerate change. It's worth the upfront investment today in order to benefit tomorrow. Energy insecurity plays into this," says McIntyre. "The shift to net zero for ports is also part of the recovery mechanism after the pandemic. Businesses such as ours are using this as a real driver

“We now have the Dragons Den of sustainability. This is how we will imaginatively drive the net zero carbon emissions agenda forward. It is a gamechanger

for change to get a greener economic recovery into the UK."

Ports are also gateways to the UK's onward and inshore supply chain. Reconfiguring the movement of goods into and across the country could lead to huge emissions savings. Some 90% of deep sea containers imported into the country arrive at ports in the south, such as Felixstowe and Southampton. Yet an estimated 60% of these goods are destined for north of Birmingham and are moved by road in heavy goods vehicles, despite sea miles generating much lower emission levels.

"We need to get goods closer to their end destination with fewer emissions and make supply chains less carbon intensive. Shipping more goods to northern ports is a no-brainer. This will mean fewer HGV drivers, lessening the labour shortage, as well as lower fuel consumption and road miles. Ultimately this will drive investment in the north, feeding into the levelling up agenda," says McIntyre.

Last year, the port of Liverpool secured new services with short sea freight operator CldN, which brings in fresh produce from Spain and Portugal. This changed shipment flows into the UK away from the congested ports of Calais and Dover and into the north, much closer to the warehouses, markets and households where it was needed.

"As an island nation we import most of what we consume. The British Retail Consortium wants its whole supply chain to be net zero by 2040. This is a monumental task involving logistics, shipping lines, ports and final mile deliveries. This is driving the agenda forward. It's a whole movement and requires a more sustainable ecosystem, which is why we need to think holistically. Yet ports are a key component of the supply chain, so we have to lead in this move to net zero," says McIntyre.

"As an industry we certainly need to work more closely together and learn from pilot projects that happen around UK ports and what could work for all. We also need industry-wide collaboration in order to pilot, trial and then implement the best low-carbon solutions."

Peel Ports has invested more than £1bn over the past 10 years on infrastructure. The focus of this investment is on driving down emissions as part of a sustainability agenda that is fully integrated into its strategic growth plans.

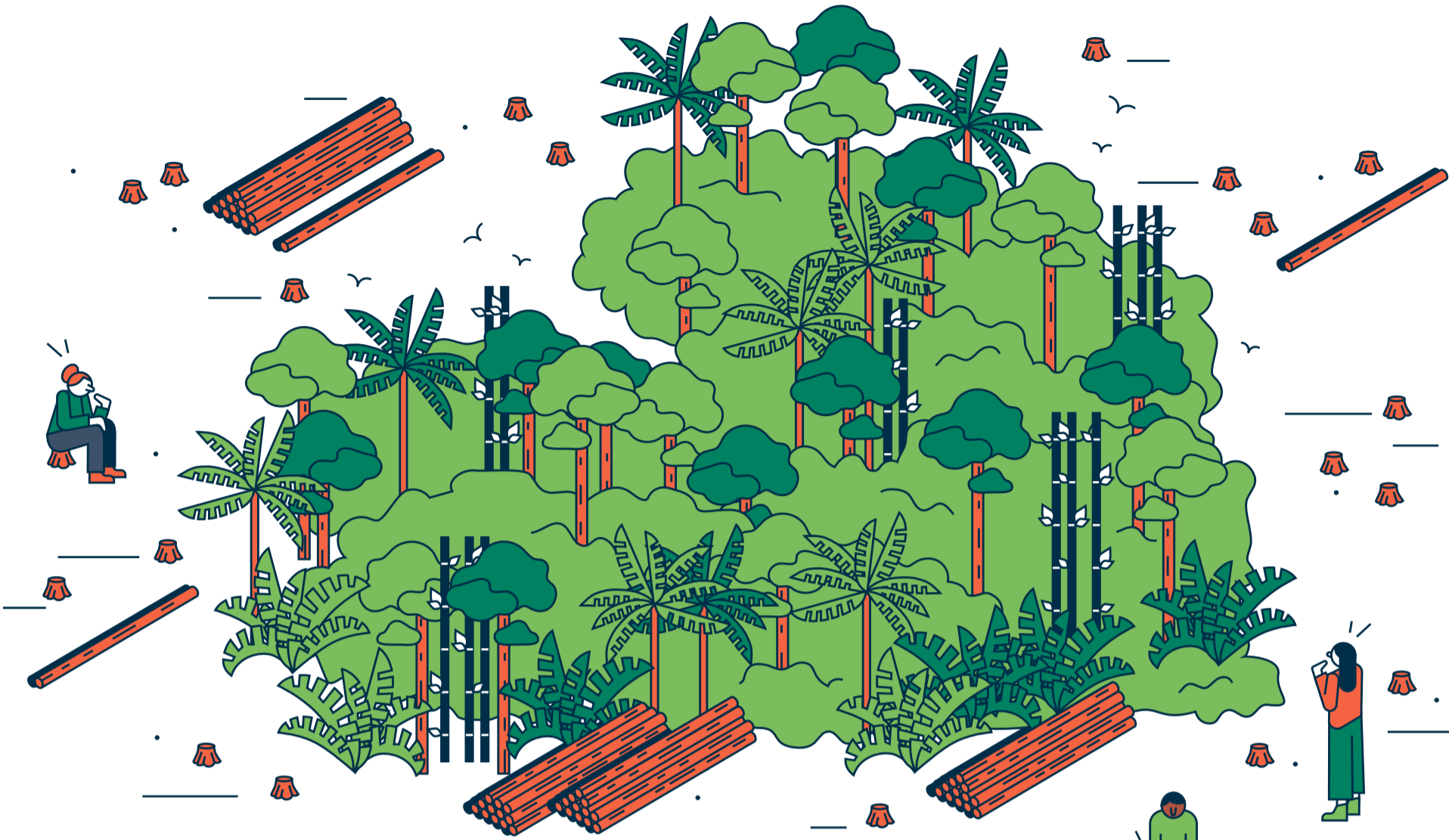
The company's supply chain partners have to sign up to sustainability codes that align to their carbon emission values. It is also investing £500,000 in electric charging infrastructure for new vehicles and conducting trials of greener fuels, such as hydrogen and electric alternatives, for plant equipment.

"If you aren't investing, then you aren't aware of the new solutions out there. That's why we've created an innovation forum that tries to solve some of the biggest questions around emission reduction. The forum tracks down answers from universities, entrepreneurs and consultants, which can then pitch their ideas into Peel Ports. We invest in the best innovation and deploy it at scale," explains McIntyre.

"We now have the Dragons Den of sustainability. This is how we will imaginatively drive the net zero carbon emissions agenda forward. It is a gamechanger."

Find out how Peel Ports is driving change at www.peelports.com





BIODIVERSITY

Conservation piece

The need to tackle nature loss is climbing both policy-makers' and business leaders' agendas, because the world's diminishing biodiversity and climate change are inextricably connected

Mark Hillsdon

The UN held another COP conference this autumn, a much-postponed gathering that discussed nature loss. The October 2021 session of its convention on biological diversity (CBD COP15) in Kunming, China, is certain to be eclipsed by the far larger

climate jamboree in Glasgow, especially as it was a virtual meeting for many delegates. When it comes to tackling the crises facing the planet, addressing biodiversity loss has always been in the shadow of cutting CO₂ emissions, but events this year are at last pushing it into the spotlight.

"You can't separate climate change and biodiversity loss. This isn't an either/or matter," argues Eva Zabey, executive director of Business for Nature, a coalition of companies and conservation groups.

Her organisation was behind an open letter – signed by a dozen prominent business leaders, including former Unilever CEO Paul Polman (see p6) – sent to all heads of state before CBD COP15. This urged them to adopt an actionable framework for biodiversity along the lines of the Paris accord on climate change.

In some respects, the move paid off. In what has become known as the Kunming declaration, more than 100 national governments pledged to place the protection of

habitats at the heart of their policy-making considerations.

Promises of this type have been made and broken before, of course, but Zabey is optimistic.

"Companies need the political certainty to move their investment, activate their innovation and shift their business models," she says, adding that they cannot be expected to take the initiative and act in isolation. "The lever for accelerated commitments and more action from business will come from government policies."

In February, HM Treasury published the concluding report of an independent review of the economics of biodiversity. This was led by Sir Partha Dasgupta, emeritus professor of economics at the University of Cambridge. The document is remarkable in several ways, none more so than the fact that it was commissioned by the finance ministry of one of the world's leading economies, not an NGO.

The report's overriding message is that our current way of life is

unsustainable. It argues that the value of the goods and services provided by nature is not reflected in their market price and that we need to start involving nature in financial decisions.

"Balance sheets should not just include what a government or business can gain by exploiting nature. They should also include what they will lose," it states.

Dr Jonathan Barnard is CEO of the World Land Trust, an international conservation charity. He believes that the review "does mark a shift in people's thinking. Dasgupta recognises that protecting what we have would cost less than trying to restore it."

The report catalysed a series of announcements that have helped to push biodiversity issues centre stage. In September, for instance, philanthropists and investors committed \$5bn (£3.6bn) to nature restoration and conservation as part of the so-called 30 by 30 target, which aims to protect 30% of the planet's land and water by 2030. A month later, the UN's human rights council voted to recognise the right to a safe, clean, healthy and sustainable environment as a basic human right. And, in another effort to give combating nature loss a stronger legal footing, a formal definition of the crime of ecocide (see panel, opposite page) has been published.

Barnard believes that these moves will prove hugely influential, noting that people "could actually start to claim that their human rights are being breached if governments permit certain acts".

More than half of the world's GDP is at moderate or high risk owing to nature loss, says Zabey, who sees

this factor as a "strong economic case for businesses to step up". But she adds that it's not only a matter of releasing green investment. The whole financial system needs to recognise the value of nature, which has to be embedded in every choice a company makes.

So what practical steps should firms be taking? They should assess, commit, act and advocate, Zabey says. "Companies need to ensure that they understand, measure and value their most material impacts and dependencies on nature."

Any commitments a firm makes should be ambitious and supported by the latest research, leaning on initiatives such as the Global Commons Alliance's new science-based targets for nature, she adds. "These will enable companies to ensure that they're operating within the limits of the planet."

Actions should be about restoring nature as well as minimising its depletion, while companies also need to spread the word. Regulators and policy-makers simply aren't used to being contacted by companies wishing to talk about nature loss, Zabey says, so this sort of tactic could prove highly effective.

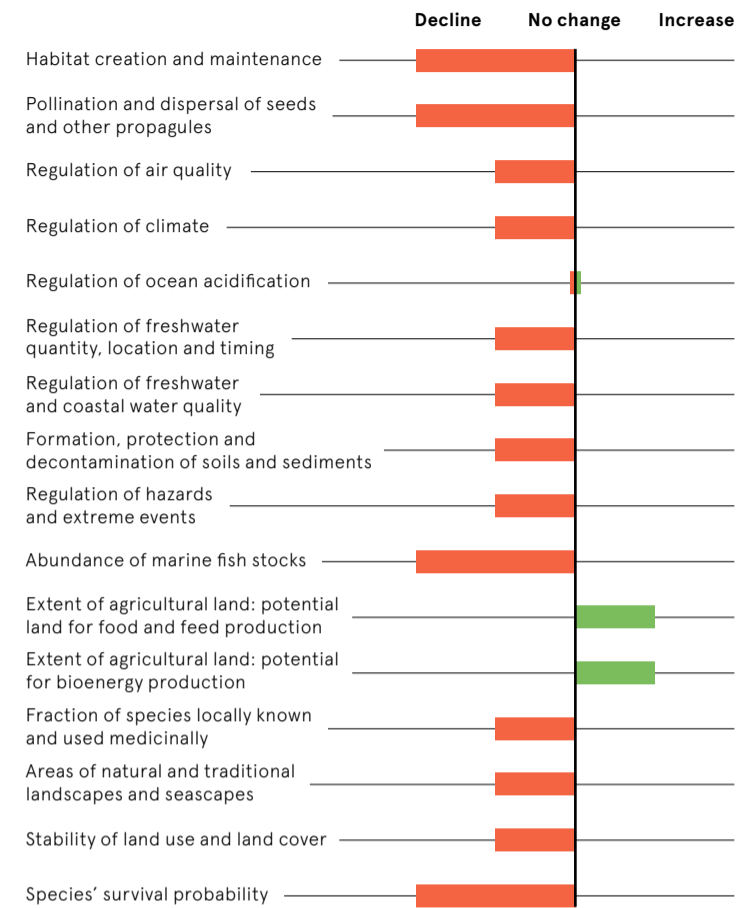
In an example of concerted advocacy, more than 1,000 companies, with a combined annual revenue of £3.4tn, have backed Business for Nature's 'Call to Action' campaign, which urges governments to adopt a global goal to halt and reverse nature loss by 2030.

Signatories include H&M, which has committed to achieving a net-positive impact on biodiversity across its value chain. It recently started a project with the World Wide Fund for Nature to help 6,000



GLOBAL TRENDS IN THE CAPACITY OF NATURE TO SUSTAIN CONTRIBUTIONS TO GOOD QUALITY OF LIFE

Five-decade trends from 1970



Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019

small cotton farmers adopt agricultural practices that could help to reverse biodiversity loss, especially in key tiger habitats in central India.

The World Land Trust also works with businesses, including a new partnership with FTSE-100 company Spirax-Sarco Engineering, as part of a push on the relatively new concept of land offsetting. As part

of its sustainability strategy, the Cheltenham-based firm is calculating its land footprint – the total space occupied by its global operations – and then funding the saving of the same area of habitat through the trust's 'Buy an Acre' scheme.

"For many firms, land is the simple metric," Barnard says. "Protect that and everything else follows." ●

How harming nature could be criminalised

In June, an independent panel of legal experts drew up a definition of ecocide, which they hope will be adopted by the International Criminal Court.

One of the main aims of law against ecocide would be to bring to justice business leaders who knowingly make decisions causing severe environmental damage, explains Jojo Mehta, co-founder and executive director of Stop Ecocide International, which convened the panel.

"The idea is to criminalise serious harm to nature at the highest level," she says. "Once a law is in place, there will be prosecutions, although the real point is that it's a protective measure. It also gives people a sense that damaging nature is not just something that's an unfortunate side effect of economic activity."

Making ecocide a crime is a way of creating a coherent set of global rules that cross borders, addressing the fact that many of the biggest polluters are

multinational corporations, according to Mehta. She believes that, while it will take at least four years before the international community starts adopting legislation, the process is inevitable.

"It's important that organisations know it's coming. Companies will start steering in a different direction," she predicts. "Once you make something a crime, you create a taboo. That's desperately needed, of course – we need to be recoiling from serious harm to the environment."

Mehta also believes that with other legal developments, such as the adoption of a clean environment as a human right, the courtroom could become the new front line in conservation.

"There's a growing awareness that something structural needs to be done," she says. "At the moment, with all the goodwill and ambition in the world, we're still only crawling in the new direction."



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