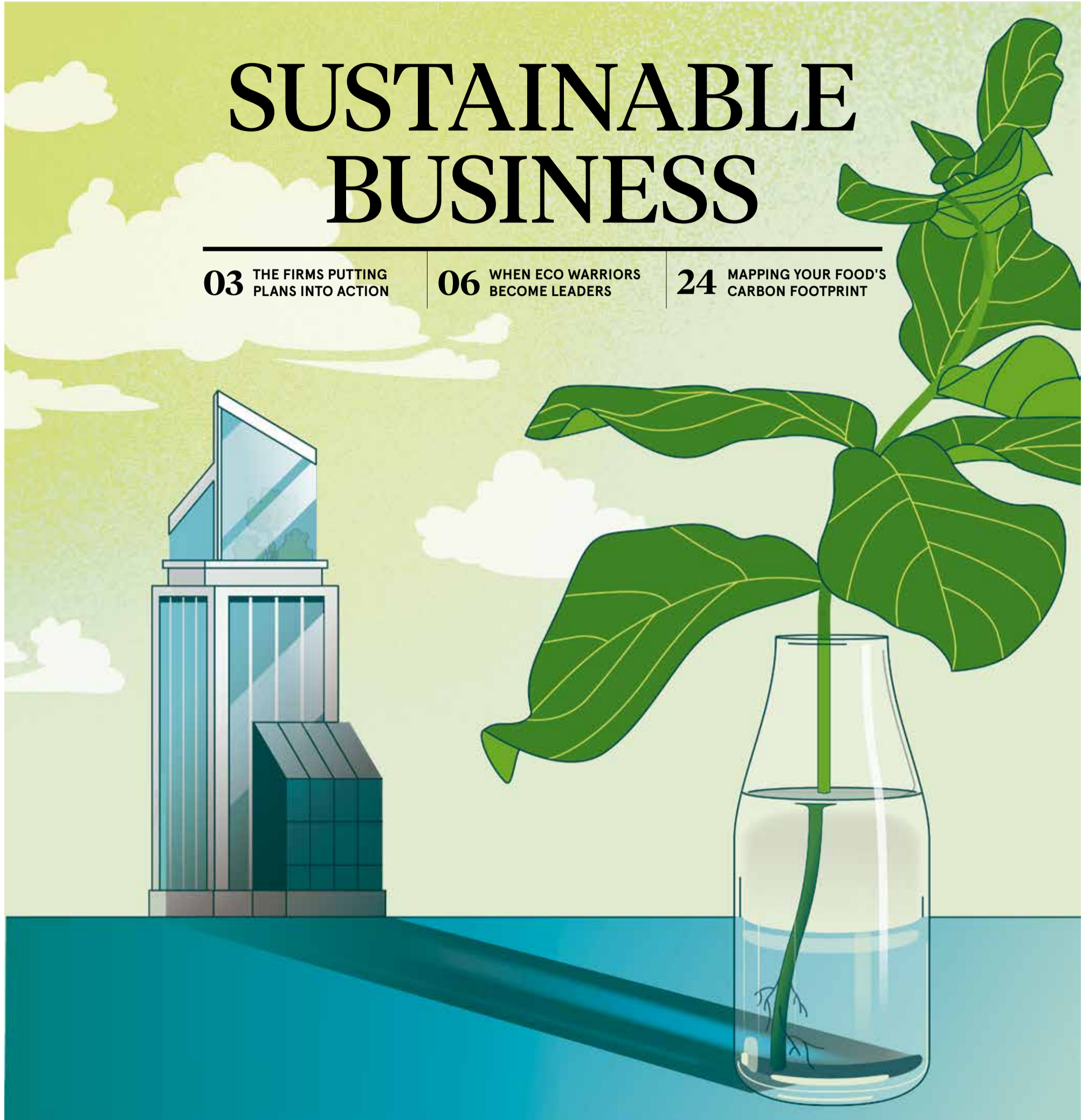


# SUSTAINABLE BUSINESS

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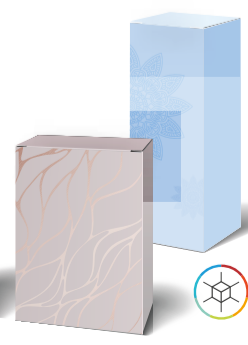


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# SUSTAINABLE BUSINESS

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## SUSTAINABLE STRATEGY

# The firms putting sustainability into action

With so many jumping on the eco bandwagon, true sustainability can be hard to identify. But leading the way are those that integrate sustainability into every business decision

Rossalyn Warren

**F**rom reducing carbon footprint to developing green products, the surge of sustainable business continues to gain momentum. Global outrage around climate change has driven the importance of sustainability as companies search for ways to put environmental care at the heart of their work. However, whether a company puts sustainability practices into action, or merely preaches about them, is a different matter.

The term “sustainability” can spark scepticism. Consumers are unsure whether a company is merely slapping an eco sticker on their product or really making the world better. Others doubt whether companies can ever be truly sustainable in a capitalist society.

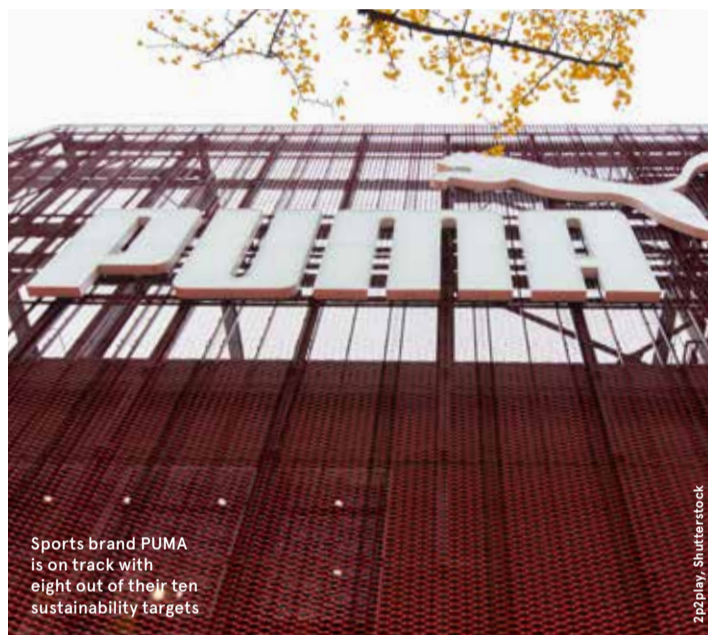
Still, there are a number of companies at the forefront, pioneering forward-thinking sustainable business models, creating positive change.

Sports companies have faced years of scrutiny over labour practices and waste, but PUMA is an example of one that has led the way in making its supply chain more ethical. In 2020, PUMA aims for 90 per cent of all cotton and polyester used in its products to come from more sustainable sources, which is achievable, considering the company reached its last sustainable target two years ahead of schedule.

In a retail industry fraught with supply chain challenges, how did PUMA not only reach its target, but two years early? PUMA says rather than concentrate on individual collections, it focuses on its entire range to create a positive environmental impact. It also collaborated with local, ethical partners, such as the Better Cotton Initiative, an organisation seeking to improve the environmental, social and economic impact of cotton production.

The company set itself specific goals. In 2015 it launched so-called 100FOR20 targets, with the aim to improve its sustainability performance in ten areas, including environment and the wellbeing of workers in its suppliers' factories. At the end of 2018, PUMA was on track with eight of the ten targets.

Even with its success, PUMA is not imposing limitations on its capacity to create long-term sustainable change. “We are proud that we have reached our targets, but we still have room for improvement,” says Stefan Seidel, PUMA's head of corporate sustainability.



Sports brand PUMA is on track with eight out of their ten sustainability targets

But some businesses treat sustainability as an afterthought, or an “extra”, separate from their business model.

Professor Kenneth Amaeshi, chair in business and sustainable development at the University of Edinburgh, says companies like PUMA are successful because they integrate sustainability into every part of the workflow.

“For sustainability to strengthen a business, every approach and decision made by the company must be through a sustainability lens,” he says. “Companies need to be making sustainability integrated in all core business strategies, making it cross-functional and collaborative.”

But to be a truly sustainable business, it isn't just about going “green” and becoming energy efficient. There's another sustainable measure of sustainability which is often overlooked: people.

Social sustainability, which addresses the community and staff through ways such as motivating

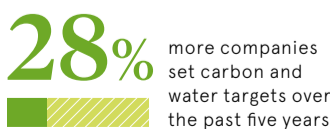
and retaining employees, is one part of the puzzle to ensure sustainability is met at a holistic level.

Furniture company IKEA focuses equally on the sustainability of product and people. On its product side, the company eradicated single-use plastics in its total range last year and, in 2018, 8.7 million IKEA products were repacked to be resold instead of going to waste.

And when it comes to people, IKEA stressed the importance of both staff and customer care. The company says sustainability should be affordable and available for all.

“Sustainability cannot be a luxury for a few,” says Hege Sæbjørnsen, country sustainability manager at IKEA UK and Ireland. “We will make healthy and sustainable living a desirable choice that is affordable, attractive and accessible for as many people as possible.”

The company cites its customer and co-worker engagement



programme as an example of this. The programme aims to help people adopt a “just-enough”, sustainable approach to everyday life. Last year, reached 6.1 million UK customers with ideas, inspiration and tips for upcycling and reusing products at home.

IKEA also focuses on supporting vulnerable groups, such as refugees. The company's skills for employment initiatives in partnership with Breaking Barriers help refugees gain work experience and improve their job prospects. It enables refugees to connect with locals and increase their understanding of local culture. After completing the training, participants are invited to apply for a job at IKEA – 30 have already done so in the UK.

Sæbjørnsen says it's important to ensure sustainability is intrinsic to its entire business model. To put this into practice, the company has trained all IKEA country retail managers to be chief sustainability officers as well. “This means they are accountable for delivering our sustainability goals at the national level, ensuring it's everyone's job,” she says.

Sceptics of sustainability say while customers insist they want sustainable products, final decisions are based on cost. But global protests against climate change show a cultural change towards eco policies and studies show sustainability is a critical issue for young people.

While younger consumers are still playing an early role in the economy, they are deeply conscious of the environmental impact of their purchases. This is especially true for Generation Z. The 2019 *Retail and Sustainability Survey* by CGS found they rank ethical business and manufacturing as one of their top factors when purchasing, while the general public is more concerned about product price and availability.

From the increase in a number of sustainability roles to the emergence of environmental bodies, it's clear sustainability is increasingly being integrated into businesses. Companies like PUMA and IKEA are demonstrating how sustainability can be at the core of their mission while still being profitable.

And perhaps the biggest indicator of how well a business will succeed isn't just its commitment to sustainability, but its ability to show the impact, especially to the younger generations, who will be the ones deciding whether they'll be future customers. ●

S&P Global 2019





10,000/Getty Images

15%

of all role specifications referenced sustainability, but the vast majority described the company, not the role

3%

of role specifications incorporated sustainability in the role definition

2%

of documents included sustainability as a specific candidate requirement

Russell Reynolds 2020

## TALENT

# Baking sustainability into talent management

Want to be a truly sustainable business? You need to start hiring talent with sustainability credentials

Jon Axworthy

Communication, emotional intelligence and problem-solving are just some of the attributes companies currently prize when looking for talent. Making sustainability a requirement, however, is being overlooked in the interview room, which could come at a real cost for any company not making it a procurement priority.

The disconnect has been highlighted by research released earlier this year by executive recruitment specialists Russell Reynolds, which revealed that out of 1,500 appointments in 2019, only 2 per cent of role profiles specified a

need for sustainability credentials as a candidate requirement.

“Conversations around sustainability have never been louder, yet this is not always translating into action on the ground,” says chief executive Clarke Murphy.

“Sustainable business cannot happen without sustainable leadership and change will only occur if companies find leaders with the right skills and motivations to drive sustainability outcomes alongside financial success. This will require a radical rethink in the way board and C-suite leaders are selected.”

Of course, the rise of the chief sustainability officer role in the C-suite has been marked of late, but Murphy believes that to create a truly sustainable company, boards must go further.

“Increasingly, companies that do not live and breathe their values are called to task by their own employees. This is not just grumbling around the watercooler. When employees complain today, they do it on social media, for everyone to see. If a company brands itself as supporting the environment, but employees know executives do not act that way, they are going to tell the world,” he warns.

This isn't the first time human resources departments have had to take a pivotal role in future-proofing an organisation to cope with emerging market pressures.

Murphy draws an interesting parallel between the necessary shift towards sustainability recruitment and the digitalisation revolution of a decade ago when business started to wake up to the fact that hiring candidates with data acumen would be essential to growth. That's when we began to hear about companies hiring chief digital officers and chief data officers, roles that are now the norm.

However, it didn't stop with C-suite appointments and companies began to respond to the changes by hiring candidates, with digital competency, at all levels.

Similarly, companies need to adapt their procurement policy to focus on the sustainability issues that are particular to their business practices so they can draw on that talent pool in coming years.

However, a sustainability recruitment strategy isn't just the opportunity to align a business with sustainability thinking because, as we move into 2020 and beyond, it will also become a necessity for any organisation that wants to attract top talent.

By 2025, millennials will comprise three quarters of the workforce and they bring with them a set of standards, confirmed by the 2016 CONE Communications Employee Engagement Study, which found 64 per cent of millennials wouldn't take a job at a company

that doesn't have a strong sense of corporate social responsibility.

There has been a quiet revolution going on when it comes to hiring and savvy procurement teams are realising that as much as they are recruiting talent, the talent is also recruiting them.

“Hiring managers who can't articulate their company's sustainability credentials and goals will find it harder to attract high-quality candidates as they will simply go somewhere that does,” argues executive graduate talent engagement specialist Amelia Jory.

“Every day I talk to candidates who are looking for their dream role. What's encouraging is that the conversation rarely focuses entirely

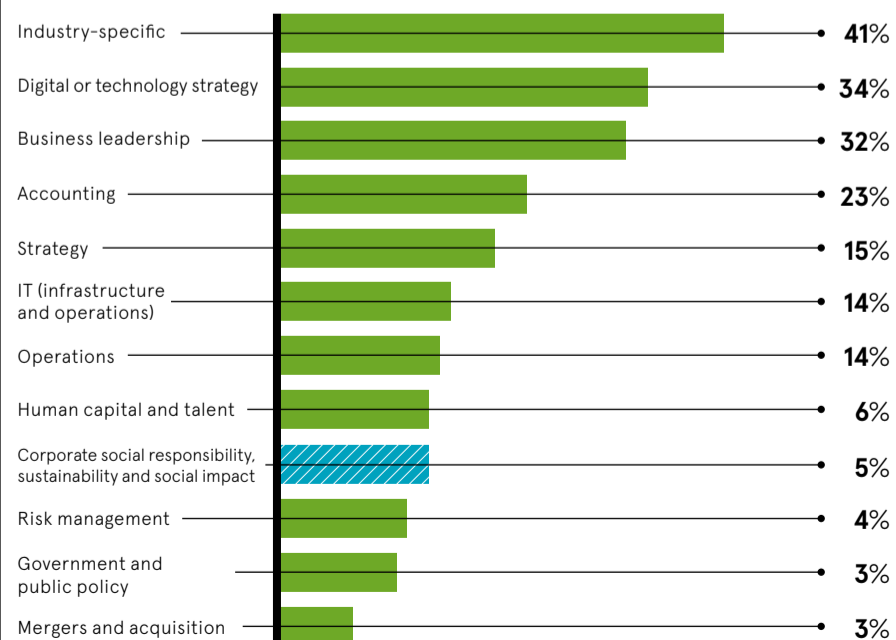
on salary, and there's one 'must have' that comes up time and time again and that's sustainability.”

HR departments also have to ensure they not only secure the talent through sustainability recruitment, but that they retain and maximise it in the coming years by implementing coaching and mentoring schemes, and instigate a learning culture where sustainability knowledge is successfully shared.

The goal is simple, but it's time critical. Identifying sustainability-focused leaders and corporate activists today will ease the environmental burden of tomorrow. It will present the C-suite with a massive opportunity to inject sustainability into the very DNA of their business. ●

## BOARDS STILL AREN'T MAKING SUSTAINABILITY A PRIORITY IN RECRUITMENT

Areas of professional experience expected to be the top recruitment priorities for boards in the near future, according to business leaders



Deloitte 2019





### Walking the walk

The Danish bioscience company Chr. Hansen was hailed as the world's most sustainable company in the 2019 Corporate Knights Global 100 Index.

However, the accolade didn't happen overnight as sustainability became part of the company's hiring process in 2015, when it formulated a "passion for a meaningful cause" branding strategy.

"We deliberately highlight our strong sustainability profile across all touchpoints, from our career section on the website to the storytelling on social media and in our job postings. It's a clear differentiator for us in the war for talent," says corporate vice president Alice Larsen.

She is aware that the world is at a tipping point and sustainability is rapidly becoming a skill applicable in every career.

"We believe that change-makers are needed in every corner of an organisation, not just in a designated sustainability department. We need to have professionals in every part of the organisation who are capable of making conscious, sustainable decisions, whether they are scientists, number-crunchers or marketers," she says.

Obviously, the organisation is still looking for skills and personality in the hiring process, but they are also

seeking candidates who are looking to build a sustainable future. "We work for a better world" is one of the key tenets of the company's culture model.

"This is a platform which has been included in our competence-based interview guide for managers when hiring," says Larsen. "The hiring manager is asked to judge if the candidate upholds ethics and values, and encourages organisational and individual responsibility towards the community and the environment.

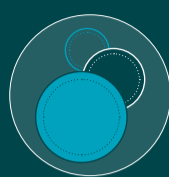
"Sustainability is indeed running through the veins of our employees, no matter the function they work in."

And these sustainability recruitment credentials don't end with a signed offer letter. In 2019, the company instigated a Better World campaign, which challenged all employees to launch initiatives that support a sustainability focus.

This focus has ensured a sustainability profile that ranges from 82 per cent of revenue directly supporting United Nations' Sustainable Development Goals to safety shoes, made from plastic waste recovered from the oceans, being tested at the company's plants. It's an active demonstration that when it comes to environmental impact, the company not only talks the talk, it quite literally walks the walk.

### EMERGING TRENDS

Anthesis' headline research findings



92%

of sustainability budgets increased or stayed the same in the two years to 2019



57%

cited circularity, plastic and waste minimisation as the most critical challenge

76%

called for quicker action on sustainability challenges



47%

identified chief executives and managing directors as responsible for environmental and social concerns



# Making sustainability happen

## Business-as-usual will no longer suffice in the fight against climate change

**T**he United Nations (UN) is calling the next ten years the decisive decade, with ambitious action needed to deliver sustainable development. Business, however, finds itself in a state of flux.

The landscape is changing, says Brad Blundell, UK managing director of Anthesis. "The last 24 months have been transformational. Gen Z and millennials are redrawing the map in favour of sustainable brands; not only are they environmentally aware and socially influential, but economically significant, too. The business-as-usual herd will soon be left with nowhere to run," he says.

For companies and organisations alike, the pursuit of profit with purpose is easy to envision in principle, but often difficult to enact in practice. The opportunities are real; it is all about making sustainability happen.

Anthesis is the sustainability activator. As the largest dedicated team of sustainability professionals in the world, the group brings together the talents of more than 500 experts, operating in 40 countries, with offices

in 17. The day job is driving sustainable performance on the ground, from Andorra to the United States.

### Emerging trends and the C-suite

Every year, Anthesis publishes the findings of its Emerging Trends research, which signposts the direction of travel on sustainability and unpacks some of the issues involved.

On the upside, the latest report is positive on money matters, with nine out of ten respondents (92 per cent) confirming sustainability budgets either increased or stayed the same in the two years to 2019.

These findings support the view that sustainability has progressed from being a nice-to-have optional extra, to a must-have item of non-discretionary spend.

Sustainability is also seen as a C-suite issue, with almost half the respondents (47 per cent) identifying chief executives and managing directors as responsible for environmental and social concerns. Heads of finance, marketing and legal also ranked as important parties.

The bad news in the numbers, however, concerns the pace of change. Action on sustainability is simply too slow. More than three quarters of respondents (76 per cent) doubt things are happening quickly enough.

### Commercial disconnect

For Fiona Place, director and supply chain lead at Anthesis, this disconnect between thinking and doing suggests a lack of conviction around the commercial imperative.

"There is an increasingly strong sense of urgency, but not the understanding to match. When it comes to sustainability, the C-suite now gets the what and the why, just not the how," she says.

“There is an increasingly strong sense of urgency, but not the understanding to match”

In response, Anthesis has developed a three-stage methodology for delivering sustainable performance, the Activator Approach. Whether working at the corporate-strategy level, or solving specific operational problems, it combines appropriate expertise and tools across a proven, end-to-end logic of change.

### Strategic and systemic

The process of commercialising sustainability aspirations might begin with the introduction of key performance indicators into supplier contracts. Focusing on greenhouse gases (GHGs) or labour rights, for instance, could generate metrics for energy efficiency or ethical procurement.

It is important to be pragmatic, to benchmark and footprint, when deciding where to start a sustainability journey. It is also vital, however, to think strategically and holistically, if unintended consequences are to be avoided, says Debbie Hitchen, director and sustainable production and consumption lead at Anthesis.

"Under pressure to act, many companies merely react with knee-jerk responses or single-issue silo projects. Replacing plastics with glass, for example, might address plastics goals, but result in a significant increase in GHGs. Sustainability is systemic," she says.

In addition to supporting more than 800 clients annually, from local authorities to corporate multinationals, Anthesis recognises the benefit in supporting early to growth-stage organisations. Anthesis Ventures invests in those who share its purpose in aligning with the UN's Sustainable Development Goals. Helping startups build and scale, it is supported by Anthesis's tech offering, comprising of more than 20 software solutions.

Blundell concludes: "Turning actionable insights into scalable impacts calls for an agile and defensible strategy that can adapt to future shocks. As evidenced by client attributes, successful organisations must be both resilient and productive. Making sustainability happen is not a one-off task. It's a mindset with a bias for action and skills to match."

For more information please visit [anthesisgroup.com/decisivedecade](https://anthesisgroup.com/decisivedecade)





C-SUITE

# Giving sustainability a real seat at the table

From leaders with environmental backgrounds to better training for boards, companies are responding to the climate issues of today. And H&M's move to promote its former head of sustainability to chief executive shows it means business

Oliver Balch

**H**igh-street fashion is in a stir. For the first time, one of the world's four largest fashion houses, Stockholm-based H&M, has a woman at the helm. But it's not only gender that marks out Helena Helmersson, it's her CV.

Helmersson has bounced around a number of functions during her 22-year career at H&M. After a stint in purchasing, she has completed spells in human resources in Bangladesh, global production in Hong Kong and, most recently, as operations chief back in Sweden.

Yet, her star really began to shine during time as the brand's head of sustainability between 2010 and 2015. She won plaudits for helping blaze a trail for greater circularity through recycling and reuse of garments. On her watch, H&M's use of sustainable cotton more than tripled and the volume of used clothes collected from stores quadrupled.

But it wasn't all roses. Most notably, her time overlapped with the high-profile collapse of a clothing factory in Dhaka, killing more than 1,100 workers and raising serious questions about labour standards in the supply chain. H&M was not directly involved, but as a significant procurer from Bangladesh, it felt the reputational fallout.

Helmersson's stellar rise indicates that the C-suite is, at long last, opening its doors to sustainability.

But what does this mean for the current crop of sustainability leaders? And how, if at all, might it reshape future boardrooms?

For sustainability leaders, H&M's decision is welcome, but some perspective is required. C-suite recruiters are not about to start searching sustainability departments for their next chief executive hire.

That's the view of Mike Barry, at any rate. He should know. For nearly 15 years, he headed up sustainable business at UK retailer Marks & Spencer. During that time, he saw social and environmental issues occupy increasing amounts of boardroom time and headspace.

Until now, sustainability professionals have overwhelmingly been subject experts, Barry notes. Typically, they would start out as environmental managers, as he did, and slowly move their way up. Now that's all changing.

Sure, sustainability leaders must be on top of their brief, he says. But they also need to be commercially minded and knowledgeable about core business, as comfortable with a profit-and-loss statement as a carbon emissions' chart.

"Today's chief sustainability officer needs to be less of a scientist or spokesperson, and much more engaged in what the business does and how it does it," he argues.

For the current cadre of sustainability leaders, this may well mean

upskilling. Previously, a basic familiarity with core business management, including marketing, innovation, operations, organisation performance and so on, was sufficient. Now, only a thorough grasp will do.

It's a trend that Sophie Walker, UK head of sustainability at global professional services company JLL, is well aware of. On joining the UK plc board in January, after five years on the executive team, she approached the firm's chief financial officer to help her get up to speed on the fundamentals of corporate finance.

But upskilling existing sustainability leaders is not the only option. Another is to rotate experts from other core business functions into board-level sustainability positions. In addition to the hard-edged business acumen they offer, they can bring a strong dose of commercial credibility to the role.

It is a tactic that ING has used with great success. When the Dutch

“

**Leaders need to be less of a scientist or spokesperson, and more engaged in what the business does and how it does it**



bank was on the hunt for a new sustainability director five years ago, it opted for a complete newbie. Prior to his appointment, Léon Wijnands had worked almost exclusively in sales and customer services. Sustainability, he initially imagined, was something people did alongside their real job.

Experience quickly taught him otherwise. Under pressure from environmental campaigners, climate-concerned investors and financial regulators, Wijnands ordered a root-and-branch assessment of the climate risks inherent within the bank's loan portfolio.

Five years on, he is as conversant as any sustainability nerd on stranded assets and climate-related financial disclosures. More importantly, under his direction, ING is now driving forward an industry-wide initiative to encourage the banking sector to align its future lending with global climate goals.

ING hasn't given up on turning off the office lights or giving to charity. But what Wijnands' commercial mindset brought to the board was a sense of how sustainability fits into the bigger strategic picture, the financial risks the subject represents, the market opportunities it presents and the macro-trends it taps into.

"The key impact that you can create as a leader in a company is to integrate sustainability into the DNA of your department or your business unit or, ideally, the whole organisation," he says.

The sentiment precisely echoes the thoughts of Catherine Harris, a New York-based sustainability specialist with recruitment firm Acre. Harris is author of a recent whitepaper that calls for companies to rejig their governance structures to "bring the voice of society" into the boardroom.

Creating a so-called social board can be achieved through a variety of

mechanisms, she suggests. Notably absent from her list is reliance on a specialist sustainability department, as is the current norm. The issues at stake are now simply too broad, and too strategically important, to be palmed off.

Instead, just as sustainability leaders are having to brush up their core business competencies, so too board members must get up to speed on sustainability issues. Options vary, ranging from periodic board-wide briefings to intensive, individual training.

An organisation offering the full gamut is the Cambridge Institute for Sustainability Leadership (CISL). Linked to Cambridge University, this specialist centre reports a huge rise in demand over recent years for board education.

Not only are sustainability issues now seen as critical to future business growth, says CISL's executive director of education Lindsay Hooper, but stakeholder demands on boards are also ramping up dramatically.

People are looking to business leaders not just to be "less bad", but to come up with real solutions to big sustainability challenges. If top executives can't respond when put on the spot, "then they are going to be on the back foot", Hooper argues.

Walker at JLL is alert to this changing dynamic. Last September, she arranged for the company's UK senior management team to attend a two-day bespoke course about sustainability leadership at CISL.

Her fellow executives didn't emerge as overnight experts, she concedes, but they did come back with fewer fears and uncertainties about the subject. The experience left them with a greater level of comfort about "what they know and what they don't know", she observes.

Harris's vision for a social board supports calls for stakeholder advisory panels. Made up of external

6%

of companies have the chief sustainability officer regularly attend board and committee meetings

GSM Association 2019

4%

of boards discuss corporate social responsibility, sustainability and social impact at every board meeting

Deloitte 2018

subject experts, the role of such panels is twofold to point out flaws in a company's existing practice and to make boards aware of emerging trends that could feasibly impact the business.

Consumer goods giant Unilever, which is regularly ranked as one of the world's top sustainability leaders, boasts such a panel. The seven-member advisory council includes a world-renowned expert in human rights from Harvard, the conservation director at global environmental charity WWF and a former sustainability tsar for the UK government.

The panel's official role is to guide and critique Unilever's overarching sustainability strategy. The company's head of sustainability Rebecca Marmot puts it more bluntly, describing its members as "critical friends" to the chief executive and his senior team.

Whether fashion or finance, retail or consultancy, every business sector now finds itself in the sustainability firing line these days. The planet is under strain and big business is an obvious, and far from guiltless, target of blame.

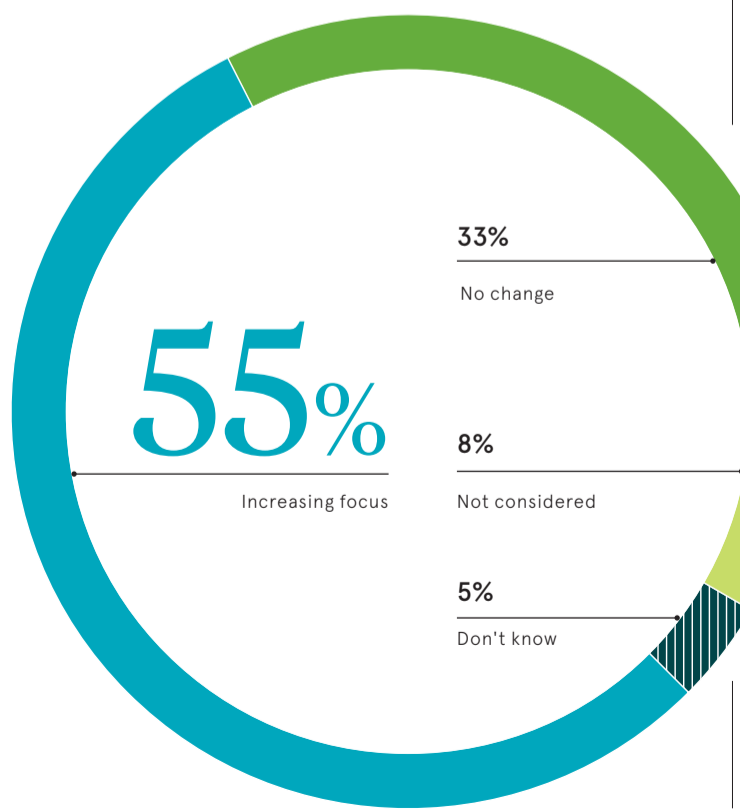
But people also want answers. If the private sector is going to contribute meaningfully, then sustainability leaders and the C-suite need to shift tack with more business know-how for the former and greater sustainability expertise for the latter.

Crucial as a C-suite shake-up certainly is, the central function of company boards remains the same. To quote Peter Truesdale, director at consultancy firm Corporate Citizenship: "This isn't about saving polar bears." Instead it's about business leaders better identifying sustainability-related risks and opportunities, and factoring them into corporate strategy.

Done well, companies will stand an infinitely better chance of thriving in the future. So, hopefully, will the bears. ●

**SUSTAINABILITY MOVING UP THE BOARD'S AGENDA**

In answer to the question: "In the past one to two years, how has the board considered the following with regard to your company's strategic priorities?"



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## SUPPLY CHAIN

# Plotting a clean path

With evermore complex supply networks, it is difficult for producers to guarantee their products are 100 per cent sustainable. So could blockchain be the answer?

Francesca Cassidy

**W**as the cobalt in your phone dug up by a child miner or the cotton for your clothes farmed by slave labour? How much CO<sub>2</sub> was emitted or plastic wasted manufacturing the cars we drive? These are impossible questions for the end-consumer and deeply challenging for producers themselves, but new technology could finally be providing sustainable supply chain solutions.

As customers demand faster, more efficient services, without paying more, companies have had to become increasingly creative. The need to balance cost, speed and quality has led to supply chains getting longer, more complex and much less transparent.

"We've spent decades shaping the supply chains we deserve," says Simon Geale, senior vice president of client solutions at procurement consultancy Proxima. "We've turned a blind eye to what's happening beyond price and profit at that tier-one level." He believes companies must start embracing the "4 Ps" of people,

purpose, planet and profit to unwind decades of values, habits and actions.

The first step is traceability. Something which, according to Doug Johnson-Poensgen, founder and chief executive of Circular, "hasn't been truly possible until the advent of technologies like machine-learning and blockchain".

Circular's mission to improve traceability through supply chains underpins their electric vehicle project with Volvo. This process is ripe for change as it relies heavily on cobalt, a product associated with child labour. Although only about 25 per cent of Congo cobalt might involve child labour, the raw material is mixed in with that of other countries at refineries, tainting everything.

"The reality is when you get to the other end of the supply chain, the car manufacturer really has no idea whether stuff has been responsibly sourced or not," says Johnson-Poensgen.

The project used digital twins and blockchain to track materials from a mine, through refining

and manufacturing, to the final product of an electric car battery. Once cobalt ore has been responsibly sourced, every step of its journey is immutably noted on a blockchain, so its exact provenance can be proved.

Once the ore reaches the refinery, a digital twin is created for it and fed into the manufacturing process. "We're essentially saying that this amount of ore in, through this specific process, creates this amount of product out, testing for anomalies and whether mass, balance and time elapsed fit the recipe," says Johnson-Poensgen. Every step is meticulously recorded, adding much-needed transparency.

Blockchain can also reduce waste, aid material recycling and, crucially, tackle carbon emissions. "In the not-so-distant future, costs will be applied to carbon in the supply chain. To ensure the quality of emissions reporting is trusted, blockchain will likely be used to make sure what's emitted is what's reported," says Frank Clary, director of corporate social responsibility at Agility Logistics.

Environment-saving technology can present something of a poisoned chalice, however. While artificial intelligence (AI) can make connections no human brain could, spotting countless efficiency gains, it takes as much carbon to train one AI model as five cars emit in their lifetime, according to recent research by the University of Massachusetts Amherst.

“

**We've turned a blind eye to what's happening beyond price and profit at that tier-one level**

Internet of things sensors in factories can measure everything from air pollution to water quality to combat industry's impact on the environment. But the data these sensors gather is processed in datacentres requiring huge amounts of energy.

Blockchain too has its critics. PwC blockchain specialist Alex de Vries points out that the global power consumption for servers running the software for blockchain-powered bitcoin is almost that of Ireland.

But not all blockchain was created equal, explains Aparna Jue, product director at cryptocurrency platform IOHK, which claims to have created the "world's most sustainable blockchain".

"There are two methods of blockchain: proof of work and proof of stake. Proof of work, which bitcoin is built on, involves brute force, puzzle-solving computational power. With this method you run a mining pool with many computers trying to solve a problem," says Jue.

Proof of stake, brainchild of IOHK, whose chief executive Charles Hoskinson is also co-founder of cryptocurrency ethereum, does not rely on such computational power. "Proof of stake is about how much stake you can put up to validate information and you get paid network fees for being able to do that," adds Jue, explaining this makes proof-of-stake blockchain more sustainable through sheer reduction of energy usage.

Sustainable or not, the key to supply chain success is being able to prove blockchain actually works. "It can have the biggest impact in the larger supply chain," says Jue. "That's also where you find the most inertia among those in charge. So it's better to test with small-to-

medium use cases, derisk it and build success stories before selling the value proposition."

There are advantages beyond sustainability, which make blockchain solutions more palatable. "It's not controversial to say the digitisation of a process can make it more efficient," says Johnson-Poensgen. "If you know where materials are flowing, you can reduce the working capital tied up in the supply chain, as well as administrative error and costly supply chain fraud."

Armed with test cases and demonstrable efficiency gains, any supply chain manager looking to implement blockchain must consider one thing: change is often a mindset issue. "Reducing impact is not always expensive and a lot is behavioural," explains Clary. "We might think reducing emissions means moving items on zero-emissions vehicles or using asset technologies that we perceive to be new and expensive. But the reality is different. It is often an investment of time."

Ultimately, it comes down to what kind of impact you want your business to have. Whether you embrace sustainability to make your supply chain more efficient, attract investment or satisfy customers, it is a business objective that is now impossible to ignore.

"You can't forget the profit element," says Proxima's Geale. "At the moment, not being sustainable could be a real growth inhibitor and that's a key risk appearing on the board's agenda." A tipping point has been painstakingly reached. He concludes: "All the environmental tragedies we are witnessing, all these perfect-storm moments are pointing us in one single direction." Let us hope it is the right one. ●

## CHOOSING THE TECH TO SMOOTH OUT THE SUPPLY CHAIN

Tracking the extent to which the following technologies are currently used in procurement

● Fully deployed ● Scaling ● Pilot ● Being considered ● Not at all

Predictive/advanced analytics



Robotics



Visualisation



AI/cognitive



Sensors/wearables



3D printing



Blockchain



Virtual/augmented reality



0%

100%

Deloitte 2018



# Slashing building emissions is critical to achieve net zero

Decarbonising the built environment is an achievable win-win for business and the planet

**A**chieving net-zero carbon emissions is no longer a pipe dream. It is now a realistic, reachable and non-negotiable target if we're to combat climate change. Yet the built environment represents a huge challenge. Emissions from buildings actually went up in recent years and the industry accounts for a staggering 40 per cent of the UK's total carbon footprint. Now, it has the potential to lead the charge to net zero. There's a major push for newly constructed buildings to be more energy efficient. What can't be overlooked is that more than 80 per cent of the buildings that'll be standing in 30 years have already been built today. This means there's a huge priority to decarbonise existing real estate by reducing energy consumption and carbon emissions right now. The race is on.

"Our current built environment is a huge part of the problem, but with the right investment it could be an even bigger part of the solution. Not many people know that it's more cost effective to achieve net zero in existing buildings. Sustainable new builds are great, but will still use huge amounts of resources," explains Richard Brown, partner at Hoare Lea, a leading multi-disciplinary engineering consultancy firm.

If the cement industry were a country, it would be the third largest emitter in the world, behind China and the United States. A quarter of all of humanity's plastic and aluminium end up on-site too, as well as half of all steel. It is a resource and energy-intensive sector.

"A big frustration we have as engineers is that buildings aren't used efficiently either. The intensity of use can be low; think about how many empty office buildings there are every night. We need a drive towards mixed-use buildings; this way we can also design them to be easily adapted over the coming decades as society evolves," says Brown, whose company works with councils, businesses, developers and public authorities across the UK to drive sustainability in the built environment.

To fulfil the goals of the Paris Climate Agreement, 100 per cent of buildings must operate at net-zero carbon by 2050, with significant progress required in the next ten years, and all new buildings should target zero emissions by 2030. The framework for how this can be realised has already been laid out by the UK Green Building Council, which has been supported in its work by Hoare Lea and other key industry partners.

"We've never seen industry want change as much as today. This is no longer the tick-box exercise it was often viewed as in the past. Businesses and senior management want impactful action right now," says Eimear Moloney, head of building performance at Hoare Lea.

"The opportunities are amazing and we can make a huge difference. Reducing emissions and achieving net zero is more achievable and affordable than people realise. It takes a systematic holistic approach; it's about looking at building design, reducing embodied carbon in construction, reviewing building energy management and offsetting where possible."

There are a number of steps Moloney quickly deploys when a business or organisation brings her in to look at its existing building or estate. The first is to measure what energy is being used and what carbon is being emitted. Next is a range of measures to reduce energy consumption, from optimising controls and building systems to upgrading plant and building fabric.

The third step is to establish how much energy can be generated on-site via renewable sources, such as solar panels, followed by what renewable energy can be sourced from the grid. Finally, if there are any remaining emissions, they will need to be offset through accredited offsetting schemes, such as afforestation initiatives.

It's impressive what can be achieved. For instance, in 2015 the University of Oxford looked to Hoare Lea to reduce its carbon emissions across 20 buildings. The process helped the estate save 1,300 tonnes of carbon dioxide a year, an investment that only took a year-and-a-half to pay back in terms of reduced energy costs.

"Most buildings in the UK are still poorly operated. I often say it's like driving your car in first gear, it'll run, but not at all like it could do. So, we haven't ever come across a building that we cannot improve. Making them more energy efficient with lower emissions also ensures they are much more attractive in the long term, not just for the owners, but for tenants as well," explains Moloney, who has worked with the likes of Ballymore, Legal & General and other high-profile global consultancy firms to reduce their carbon footprint.

"The mantra used to be: what's good for business is good for society. It's now the other way around: what's good for society is good for business. There's also a whole new generation of young talent who want to be associated with

## CARBON REDUCTION PROJECT FOR THE UNIVERSITY OF OXFORD

### RETURN ON INVESTMENT (ROI)

Payback times

**1.45 years**

BMS optimisation programme



**10 years**

Solar PV installation (based on latest ROI figures)



This makes the BMS optimisation programme as cost effective as buying one solar panel, and getting six free of charge

### CARBON EMISSIONS

Yearly saving equivalents



### SAVINGS

Cost and carbon

**20**

Number of buildings invested

**£375,448**

Yearly cost saving realised

**1,336tCO<sub>2</sub>**

Yearly savings realised



**Making buildings more energy efficient with lower emissions ensures they are much more attractive in the long term, not just for the owners, but for tenants as well**

companies that are doing the right thing when it comes to the climate."

Finance is a key part of the equation and is becoming increasingly available to drive down emissions. The Task Force on Climate-related Financial Disclosures means listed companies must increasingly disclose to investors the climatic risks of their portfolios, which includes real estate.

"Financial markets can drive change," says Brown. "Corporations can now get preferential loans and interest rates for tackling emissions."

With all eyes on COP26, the climate change summit in Glasgow later this year, there's an opportunity for UK organisations in the private and public sector to slash emissions in the built environment.

"It can seem a challenging thing to do, but it's achievable. The UK could be a

world leader. We meet a lot of energy managers and heads of sustainability in our work; what we really need is for more chief executives and chief financial officers, as well as board members, to see the potential and understand how much of a win-win it is. We're starting to see this change, but imagine how quickly things could improve if those people chose to act faster," Moloney concludes.

For more information please go to [www.hoarelea.com/specialism/net-zero-carbon](https://www.hoarelea.com/specialism/net-zero-carbon)



## INVESTING

# Red flags for green investing

MEERT KAHVECI, UNSPLASH

“The industry lacks a consistent set of global standards for green investments

Sustainable finance can be an excellent way for individuals to contribute to the green economy, but can investors ever be totally sure where their money is going?

Nick Easen

When it comes to sustainable finance, we're still on the frontier of the Wild West. It's a place of untold potential, romance, chaos and the vast unknown. As the climate crisis unfolds, interest from investors in this fertile ground is reaching fever pitch. Yet the current green rush has the potential to turn into a monumental greenwash unless it's tamed soon. Luckily help is at hand.

# 77%

of senior executives say that a negative assessment of ESG factors significantly lowers the value of a potential investment or M&A target

IHS Markit 2019

“To be sustainable, we need to define sustainable,” says Adam Matthews, director of engagement at the Church of England Pensions Board, and therein lies the crux of the issue. There are certainly more than 50 shades of green finance, wrapped up in buzzwords, glossy brochures, soft-focus images and claims that a product is ethical. But it can be fool's gold.

For instance, there is a low-carbon fund which includes holdings in companies that own some of the largest coal and oil reserves on the planet.

“One company we analysed advertised an ethical portfolio when 96 per cent of its assets were in UK government bonds; just 3 per cent were in an ethical fund. This is not a one-off case either,” warns Barnaby Barker, investment analyst at SCM Direct.

“Unfortunately, the regulator, the Financial Conduct Authority, is repeatedly failing to heed the warning signs of what could turn out to be the next huge mis-selling scandal.”

In the wake of greenwash comes “impact wash”, a new tendency for funds to label anything they do as contributing to the United Nations' Sustainable Development Goals. “When in fact there are really no new or additional positive environmental or social impacts about the way they've allocated their capital,” says Narina Mnatsakanian, director of responsible investment at Kempen.

This sustainable financial quagmire is bogged down by a lack of quality data and benchmarking, as well as transparency. “The industry lacks a consistent set of global standards for green investments. Investors cannot make assumptions about what companies may be included in products labelled as ESG [environmental, social and governance], sustainable or low carbon,” says Lihuan Zhou, associate with the Sus-

tainable Finance Centre at the World Resource Institute.

With green investments moving beyond its specialist niche, a tipping point is being reached. “Mainstream financial companies and regulators are now interested. This is driving improvements in ESG reporting and investing,” says Guillaume Emin, project manager for information services at the London Stock Exchange Group.

Reporting frameworks aimed at cutting through the green fog are springing into action. For example, there's the European Union Action Plan on Sustainable Finance, with Europe hoping its gold green standard will take hold in the coming months.

Then there's the International Platform on Sustainable Finance and the Task Force on Climate-related Financial Disclosures all weighing in.

“Adoption of standardised disclosure principles will increase the number of viable investment projects, but it will also drive more green finance activity in the real economy,” says Daniel Klier, global head of sustainable finance at HSBC.

Regulation around improved disclosure will certainly cut through the opacity, that's why the EU has launched the world's first regulatory benchmark. “However, until ethical data is audited by a third party and scrutinised properly, investors will

continue to be mis-sold investments,” says SCM Direct's Barker.

The most often-cited challenge is still the perception that integrating ESG criteria into the investment process is at the expense of returns. “This long-held assumption is now collapsing under the weight of academic and practitioner evidence,” says Michael Lewis, head of ESG thematic research at DWS.

“Green finance is giving investors the opportunity to support a transition to a more sustainable world. But we need to build trust and integrity in sustainable finance.”

The speed with which the sector has gained traction is also creating an information vacuum. “We've noticed a need for educational materials that help professionals gain a better understanding of certain themes. Sufficient knowledge is instrumental when cutting through the greenwash,” says Masja Zandbergen, head of sustainability integration at Robeco.

“The worst that can happen is we look back in ten years and realise we haven't achieved anything sustainability-wise and we've also failed financially.”

We remain a long way from a market that correctly prices the systemic risk climate change poses to investments, but things are changing quickly. “Once companies are held to account, begin to act in a more transparent manner and are rewarded by attracting more investors, the more they and their peers will be incentivised to be better companies. It's a win-win for everyone,” Barker concludes. ●

DAVE/UNSPLASH

## How to steer through the fog of green

### 01 What isn't measured, isn't known

Check how funds are reporting and calibrate change against claims being made. There are no universal standards or globalised regulations.

### 02 Transparency is everything

Don't look at the headlines, but rather at the fine print and the footnotes. If you are presented with jargon, get explanations. The devil is in the detail.

### 03 Be vigilant, suspicious and question everything

Companies can still disclose information that makes them look good and hide details which don't. Impact-washing is everywhere.

### 04 Untruths on returns

There are still some who believe that environmental, social and governance (ESG) concerns come at the expense of investment returns. Research shows this is not true and in some cases ESG can enhance profits.

### 05 Continuous education

Times are changing rapidly and the market is evolving. You need to keep abreast of relevant themes. ESG is not an exact science and takes time to understand.



# The power of long-term thinking

The climate clock is ticking. With no quick fix for mitigating the effects of greenhouse gas emissions, ever more difficult questions are being asked about how to preserve a world that is changing before our eyes. In the presence of such uncertainty, however, one industry is increasingly being looked to for answers: renewables

**T**he last few decades have seen a boom in renewable energy investment, fuelled in part by favourable market conditions and generous feed-in tariff subsidies.

More recently, the combined effects of falling system costs, low to zero interest rates and increasing investor comfort with technology risk have boosted development of wind and solar projects even faster and further across the globe.

At the same time, a sudden upsurge in climate activism has begun to impact business models and mindsets worldwide, creating a fresh sense of urgency and new opportunities for investors.

## The risk with mainstreaming

Renewable energy projects are proving they can deliver stable, long-term returns at levels above traditional fixed-income vehicles. As a result, the sector has attracted new investor classes, such as private equity funds and publicly traded alternatives, in addition to large institutional players.

This mainstreaming of renewable technologies means barriers to entry have become lower and the market extremely competitive. However, this brings challenges of its own, says David

Swindin, head of Europe at Cubico Sustainable Investments.

"The issue with mainstreaming is the associated risk of short-term opportunism. The reality is renewable energy assets are complicated to operate, not straightforward. Things go wrong over a life period and new entrants do not always fully understand the market complexities," he says.

Cubico is a long-term owner and operator of renewable energy projects, committed to playing a significant role in the transition towards a clean energy world. Being jointly owned by Ontario Teachers' Pension Plan and PSP Investments, the company is not in the business of chasing high returns at any cost. Sustainability is at the heart of the business, which is driven to create long-term value for its shareholders, while caring for local communities and the environment.

## A global business

With an installed capacity of 3.3GW, Cubico's portfolio could generate enough energy to supply more than 1.7 million average UK homes and offset around seven million tonnes of coal-fired CO<sub>2</sub> emissions a year. The



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## Renewables offer the cheapest form of generation and the fastest growth

international scope and scale of Cubico involvement covers the whole energy chain, from development and construction, through to operation. Its portfolio includes onshore wind, solar photovoltaic and solar thermal.

Having a firm foothold in 12 countries across Europe, the Americas and Oceania, Cubico is headquartered in London, with regional offices in cities around the operational map, Madrid to Montevideo. This on-the-ground presence provides for excellent local knowledge and strong relationships.

Such a global mix of assets also means there is no simple one-size-fits-all approach for the energy investment portfolio. Different approaches work in different places, says Swindin.

"The developed world is all about transitioning away from coal. In the developing world, the focus is on connecting people with increased electricity demand. Both scenarios, however, point in the same direction: renewables offer the cheapest form of generation and the fastest growth," he says.

## ESG as a driver

Divesting from fossil fuels, especially coal, is an increasingly common story for pension funds and banks looking to align their portfolios with environmental, social and governance (ESG) criteria. In fact, it was a perceived need

to decarbonise an economy heavily reliant on coal that prompted Cubico to re-enter the Australian market in recent years.

For Cubico, though, ESG is about more than just decarbonisation, explains chief executive Steve Riley.

"ESG is a big thing for Cubico and our shareholders, but also for our stakeholders and our staff. People want to know both where their money is going in investments and where it is coming from in earnings. In our sector, ESG is now the new normal," he says.

This profound commitment to ESG drives the company's unique approach to corporate social responsibility, notes Olga Garcia, general counsel and head of corporate affairs.

"As a renewable energy business, it's vital we recognise and act on our responsibility towards the environment and society. We take enormous pride in being able to combine our sustainable message with our cultural identity and corporate values through initiatives which promote the economic and social development of our local communities," she says.

In 2019, for instance, Cubico joined forces with the Mexican Association of Solar Energy to bring solar-powered light to the Huichol community, living in a remote, mountainous area of the country. In total, some two million people in Mexico live without access to electricity in their homes, making daily tasks difficult and sometimes dangerous. In return for the solar kits, each family gave Cubico a small piece of art, which it later sold to raise money for rainwater collection systems for the community.

## Sustainability over time

Being a long-term owner of assets not only delivers meaningful benefit

to communities, it helps build local teams and in-house capacity too, bolstering credibility with government and regulators.

More stable and sustainable than short-term buyers, yet more dynamic and agile than slow-moving utilities, long-term private ownership is also ideally suited to manage market uncertainty; and disruptors are inevitable.

For the power sector, electric vehicles and energy storage are the two game-changers guaranteed to move the market over the next few years, one stimulating demand, the other tacking intermittency of generation. Servicing this need is a key challenge for both the energy industry and its investors.

The latest forecasts from Bloomberg NEF estimate that switching from two-thirds fossil fuels in 2018 to two-thirds zero-carbon energy by 2050 could mean 50 per cent of world electricity being supplied by wind and solar. This translates to wind attracting \$5.3 trillion and solar \$4.2 trillion of the massive \$13.3 trillion investment needed into new power-generation assets.

These are huge numbers and long-term thinking will be critical to success. Riley concludes: "A long-term strategic vision allows you to build relationships with landowners, suppliers and other stakeholders. If they believe you are in it for the long term, you win their trust and their follow-on business too. It's a virtuous circle and we aim for Cubico to be the partner of choice."

For more information please visit [cubicoinvest.com](http://cubicoinvest.com)



02

01 The 50MW Arenales concentrated solar power project in Seville, Spain, was acquired by Cubico in early 2020.

02 Last year Cubico delivered 200 solar kits to the remote Huichol community of San Andrés Cohamiata in Jalisco, Mexico.



## ARTIFICIAL INTELLIGENCE

# Are AI and sustainability the perfect match?

As with many tech solutions, artificial intelligence takes vast amounts of energy to create and implement but, given the many ways it can aid sustainability projects, do the pros outweigh the cons?

Jim McClelland

**A**rtificial intelligence (AI) is hot, sexy even. Sustainability, by contrast, can come across as rather book smart and earnest. Nevertheless, like the odd couple of tech for good, AI and sustainability are

increasingly being seen together in public.

From precision agriculture to environmental monitoring or supply chains to energy grids, the two of them are clearly in a relationship. It is complicated, however.

On the one hand, AI supports and boosts sustainability; on the other, sustainability can be seen as a concern and even a liability for AI. So, are they the perfect match? There are arguments both for and against.

## FOR

Applications abound for sustainable AI and machine-learning. FarmGrow, for example, is a social enterprise established by the Rainforest Alliance and Grameen Foundation to support farmers in major cocoa-producing areas of the world. It coaches them in optimising yields without negative environmental effects.

Using Satelligence to combine satellite imagery and AI, FarmGrow employs remote-sensing technologies to track production and receive alerts about sustainability risks such as deforestation.

At the other end of the food cycle is Karma, a food-waste app endorsed by President Obama, also underpinned by AI. Karma enables restaurants and supermarkets to list food that would otherwise be thrown away and sell it to the public at a discount. To date, the business has raised \$16.7 million, rescued 900 tonnes of food, saved two million meals and cut 1,300 tonnes of CO<sub>2</sub>.

Working with bytes of a different kind, London-based iSize Technologies specialises in deep-learning for sustainable video delivery. Ideal for data-intensive streaming services, its AI precoder software significantly reduces bitrate with no loss of visual quality, but up to a four-fold reduction in energy.

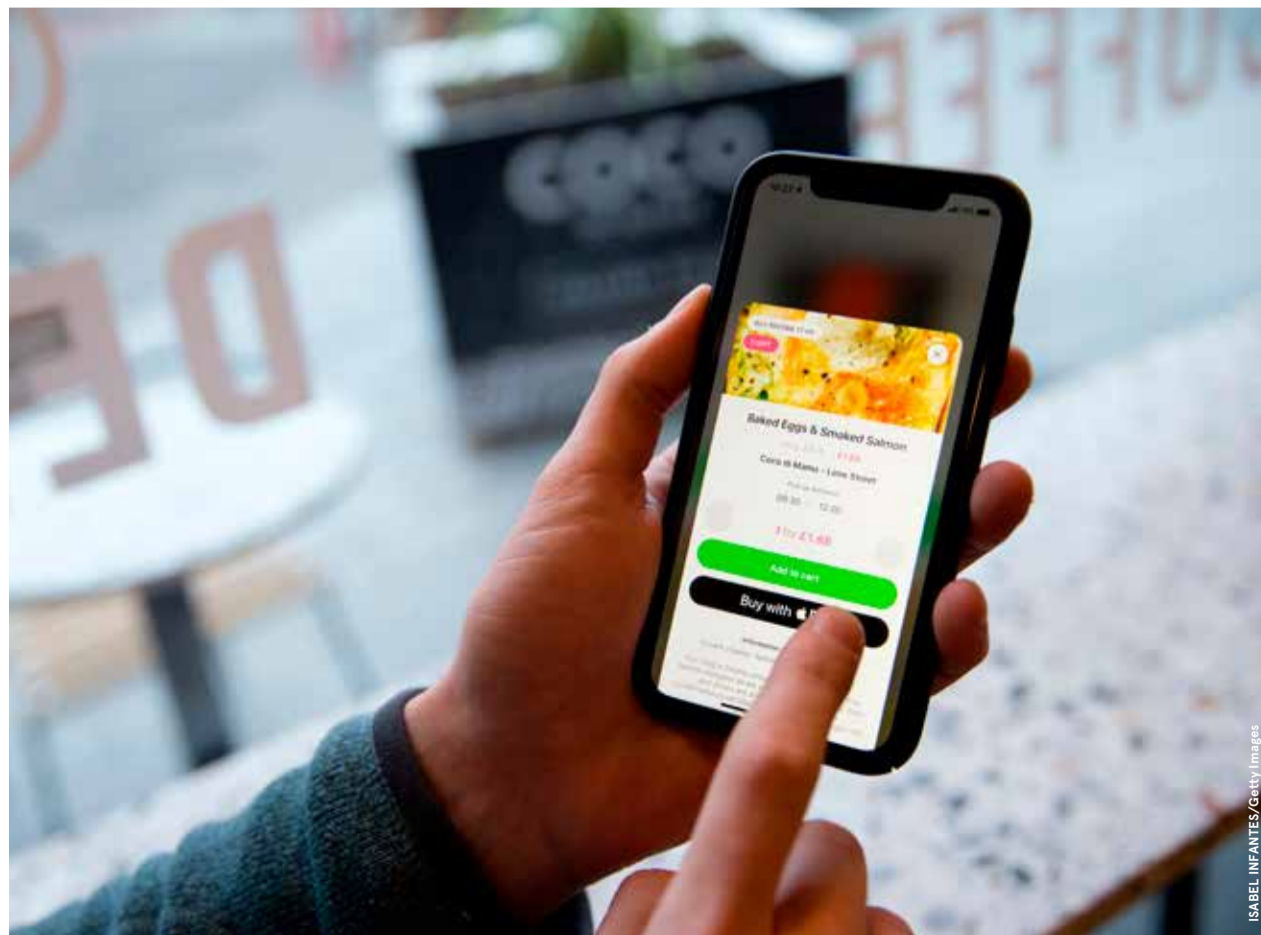
Putting such AI and sustainability benefits into perspective, the latest year-on-year figures show Netflix subscriber numbers grew 20 per cent in 2019, yet its energy consumption rocketed 84 per cent, amounting to enough to power 40,000 US homes. This, though, is the world of technology and tech does not stand still.

In logistics, the focus is evolving with the core technology itself, towards a fusion of the internet of things (IoT) and AI, known as AIoT, says chief architect at MindTree Rajamani Saravanan. "The original purpose may have been early prediction of faults or optimising usage patterns, but the large volume of data now available has opened up new avenues of exploration," he says. "AI has essentially enabled the creation of energy-efficient freight systems, while in pursuit of greater supply chain orchestration."

Not all positive impacts of sustainable AI are environmental, though. There are societal benefits, too. Since it is easier to criticise and alter a machine than ourselves, algorithms and AI can help make us more conscious of our own biases, says Diana Xhumari, chief executive of digital transformation company Tegeria.

"Distancing ourselves from the decision-making process is making us more logical and fair," she says. "For the first time, we are talking openly about unconscious biases and how to handle them, so we don't discriminate against anyone, either through technology or human interaction, especially in the workplace."

Food-waste app Karma enables restaurants and supermarkets to list food that would otherwise be thrown away and sell it to the public at a discount



**“For the first time, we are talking openly about unconscious biases and how to handle them, so we don't discriminate**

## AGAINST

**A**I has its critics and its issues. However, the argument is not so much against AI in principle, more in practice.

As with most datacentre technologies, including blockchain, energy consumption is a valid concern. There are also question marks about the cost of AI as sustainable project spend.

In addition, when seeking more holistic sustainability solutions, the potential arises for unintended consequences. An algorithmic model overly focused on a single metric, such as carbon, might ignore or even exacerbate other environmental and ethical risk factors, such as child labour or ocean plastic.

The rush to erase all trace of people from AI is wrong, argues chief executive of M&C Saatchi Performance Christian Gladwell. "Society relies on two key concepts of human interaction: nuance and context; and machines struggle with both," he says. "AI needs human insight to function to its true potential and support a sustainable society. Without that deference to humans for a final decision, we run the risk of algorithms making, at best, insensitive decisions, at worst, dangerous ones."

Instances of AI getting it wrong include Uber failing to override surge-pricing algorithms at the time of a London terror attack.

When it comes to energy consumption, the starting point for unsustainable AI is bad data, says David Niki, chief technology officer at Innwire. "The most power-consuming process is to train the AI and intelligent models need thousands of datapoints," he says. "However,

not all data is good data, as datasets tend to have duplicate data, outstanding data or even biased data. So, the real sustainability case is to find the proper data."

Essentially, AI-based solutions are only as good as the algorithms they use, agrees José Manuel Benedetti, principal architect at IT integrator Insight. They must be coded to cope with specific-use cases and given best quality available data.

The answer, however, is not simply to throw money at AI and sustainability, inflating expectations and budgets. He concludes: "Over-ambition with AI is essentially running with scissors: you might get to where you're going sooner, but trips along the way could seriously harm you or others. Ambition is admirable, but has to be accompanied by realism. A relatively modest project with achievable sustainable goals will give much better long-term results, even if it's less glamorous."

The problem for AI and sustainability is ultimately not AI itself, but bad applications of AI. In the end, no amount of smart tech can save a dumb decision. ●

“

**The most power-consuming process is to train the AI, which needs thousands of datapoints**





32%

estimated increase in delivery traffic emissions across the largest 100 cities worldwide by 2030

21%

estimated increase in traffic congestion

World Economic Forum 2020

77%

of consumers are conscious of or care deeply about the environment when thinking about how they receive their deliveries

Metapack 2018

# Logistics for a sustainable world

Once seen as a sign of growth, urbanisation is fast turning the 21st-century city into a pressure cooker of needs and wants

**A**fter housing and utilities on the shopping list of municipal provision, come transport and mobility, complete with concerns around congestion, pollution, noise and inconvenience.

Moving people and goods around successfully is fundamental to any hopes of doing sustainable business in a liveable and accessible city. As a result, solving the urban transport puzzle is one of the major challenges facing any aspiring high-density, but low-carbon and pollution-free, metropolis.

Tackling road transport is not easy, however. Policies such as the congestion charge in London and Madrid, or even car-free days in Paris, are evidence of historic cities wrestling with a mix of legislative fixes designed to keep the traffic flowing and the air clean.

Business clients are increasingly hearing the push of these rules and regulations as road users. In addition, they are feeling the pull of customer demand driving the retail agenda, says David Saenz, chief operating officer at last-mile logistics specialist Stuart.

"Brands are increasingly hearing from consumers that sustainability in logistics and delivery, how they receive their items, is important to them. It is directly affecting brand

loyalty and the likelihood of repeat purchases, which is critical in a competitive retail market," he says.

Today's conscious consumer expects speed of delivery, convenience and environmental responsibility. How you address this logistics dilemma, in an urban context and on a technological level, is the big question.

## Delivering on climate ambition

Answering the requirements of sustainable city-centre logistics means satisfying a complex equation for boosting delivery precision and customer satisfaction, while critically cutting carbon, as well as cost, distance and time. This calls for climate ambition, says Saenz.

"At Stuart we have declared a demanding goal to be running a 100 per cent green fleet by 2021," he says. "Already, we are at 60 per cent across three countries. We are passionate about making cities less polluted and congested. It is a driving force for what we do and a matter of internal and external motivation."

In terms of technology development and operational improvement, there are essentially three dimensions in which Stuart can directly impact environmental issues: routing, capacity and transport type.

When it comes to routing, well-known off-the-shelf solutions already exist. However, smarter delivery is about more than just shorter distances. Factoring in data for specific drivers, operating in a certain city, for a given mix of clients, provides Stuart with optimal custom mapping to refine routes from pick-up to drop-off.

On capacity management, the benefits to sustainability and efficiency are obvious; if every courier can maximise space in their vehicle, parcel volumes go up and the trip count goes down.

The final parameter is the transport type itself. The 60 per cent of the Stuart fleet currently carbon zero comprises bicycles, walkers and electric vehicles, including mopeds. Allocating the transport type to the task, though, is still a crunch area for logistics, with significant sustainability gains to be won and lost.



**Our job is to deliver what we know everybody wants: logistics for a sustainable world**

Raising the bar, Stuart has launched a green-only service offering in the UK market. Also, working for one of the biggest grocery players in France, for instance, the company uses walkers, even deselecting bicycles. This not only cuts carbon emissions, but also eases congestion as carbon-zero vehicles can still contribute to clogging up a city. The means of delivery matters, explains Mr Saenz.

"We need to be smart about despatch, understanding the differences between client operating models and business needs, so we can put the right tools together at the right time to optimise transport type," he says.

## Shared, efficient and reliable

In strategic terms, the sustainability vision at Stuart is for a service that is shared, efficient and reliable.

Shared is key. The traditional business model for last-mile logistics was built on each operator using their own dedicated fleet of vehicles. However, the more providers can get clients to pool their volumes together, the more they can optimise on routing, capacity and transport type.

Efficiency touches everything. A clear priority for a retailer, for instance, might be to improve the quality and scope of their next-day and same-day offer, under pressure from market rivals and customer demand.

In this scenario, the challenge for Stuart is to meet client needs while still supporting core sustainability goals. One way is to employ microhubs within cities. In a traditional supply chain model, a retailer would typically ship goods to their own warehouse, then to a third-party carrier distribution centre, where parcels are sorted, before being loaded on to a diesel truck for distribution. This multi-step infrastructure is a real constraint.

The Stuart solution is to have retailers inject directly into the city centre, via a smaller microhub facility. Cutting out the extra leg saves on truck time,

which speeds up delivery, allows for greater precision and, most importantly, cuts carbon.

Furthermore, once those parcels have been sorted in the city-centre microhub, additional sustainability and efficiency benefits can be realised by being smart about transport type and capacity management.

The third attribute is reliability. This performance essential is underpinned by the ongoing programme of technological advancements at Stuart. Over time, any service that is unreliable is simply not sustainable.

## Tipping point for sustainability

Seeking to solve just one piece of the urban logistics puzzle requires substantial investment in technological innovation on the part of Stuart. It is an ongoing process of continuous refinement in pursuit of operational excellence, responding to evolving city environments, policy shifts and the effects of climate change.

The prize though is big and real. As the sustainable logistics model approaches cost parity with the traditional alternative, the tipping point nears for an explosion in demand.

Saenz concludes: "If you were to ask clients, brands and all end-users whether they would prefer their items delivered in a sustainable way, of course they would. Our aim is to show retailers that sustainable last-mile logistics can be economically viable and show customers they can enjoy great quality, environmentally friendly delivery."

"Our job is to deliver what we know in the end everybody wants: logistics for a sustainable world."

For more information please visit [stuart.com](http://stuart.com)

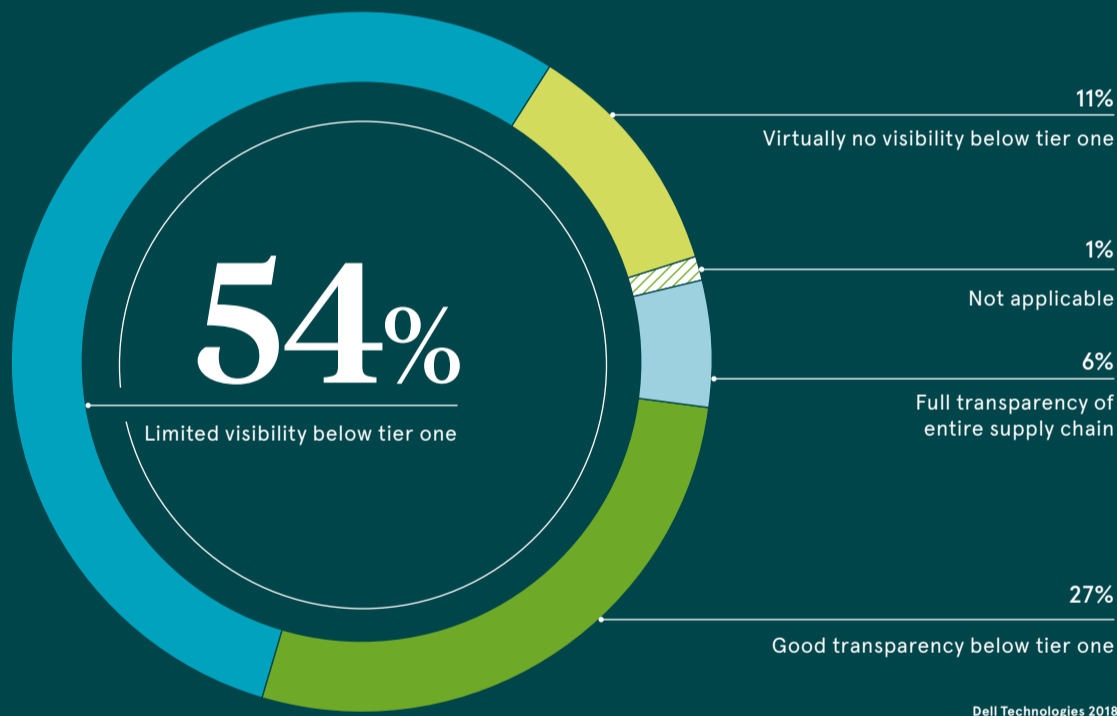


# GETTING A CLEAR VIEW

Increasingly long and complex, supply chains can pose some of the biggest sustainability challenges for companies, particularly when it comes to visibility over their suppliers further along the chain. Transparency, therefore, is key, but how easy is it to achieve? And who's responsible for making it happen?

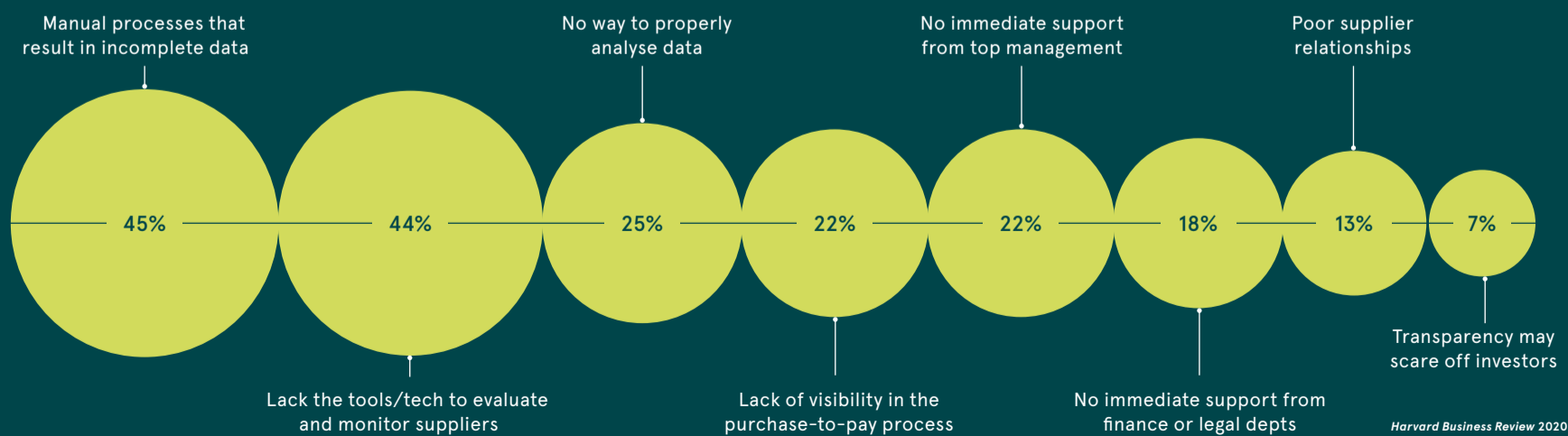
## HOW TRANSPARENT IS THE CURRENT SUPPLY CHAIN?

Worryingly, the vast majority of chief procurement officers say they have little-to-no visibility beyond their tier-one suppliers



## A LACK OF TECHNOLOGY GETTING IN THE WAY

Business leaders' top barriers to getting greater transparency into their suppliers' business practices



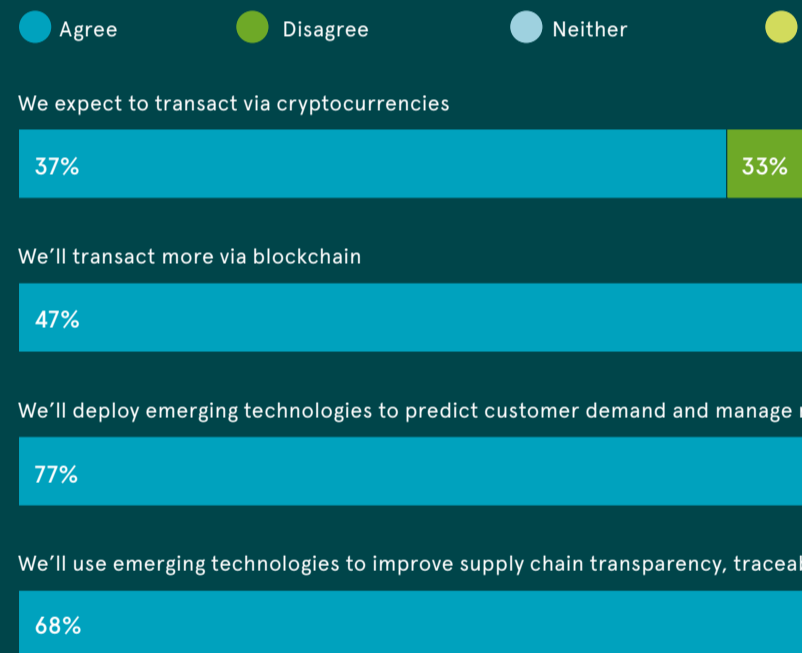
## WHAT'S THE REAL VALUE OF TRANSPARENCY?

Business leaders rated the impact their organisation's level of transparency has had on various business metrics



## DOES TECH HOLD THE KEY TO TRANSPARENCY?

C-suite members' five-year plans for embracing emerging technologies



Percentages may not equal 100 due to rounding

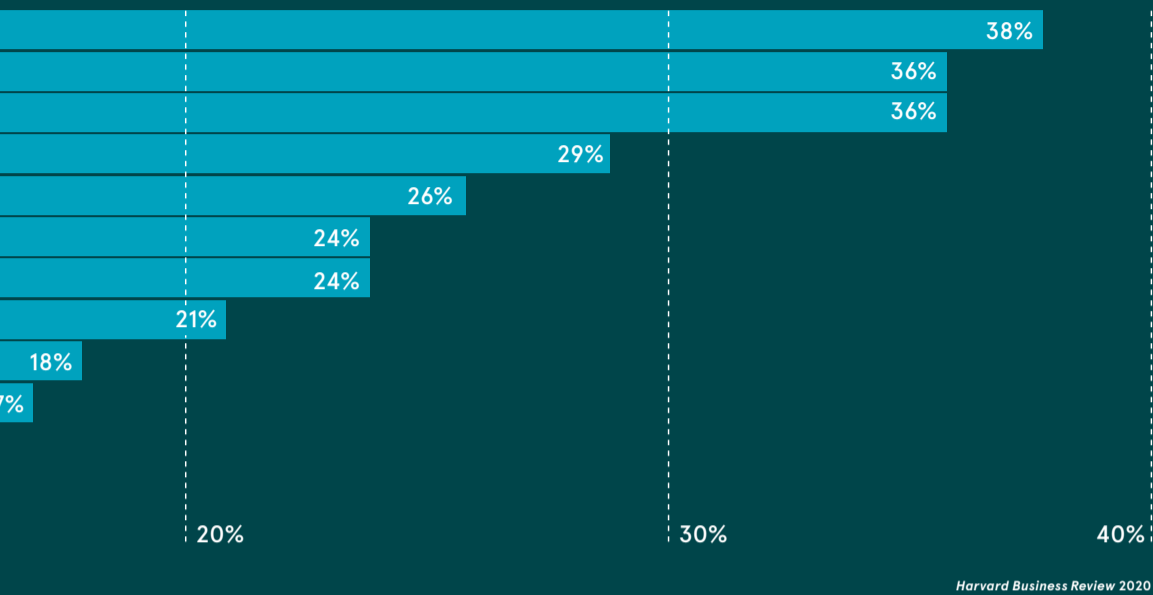
## WHO'S RESPONSIBLE?

The extent to which business leaders believe their suppliers are responsible for driving business practices

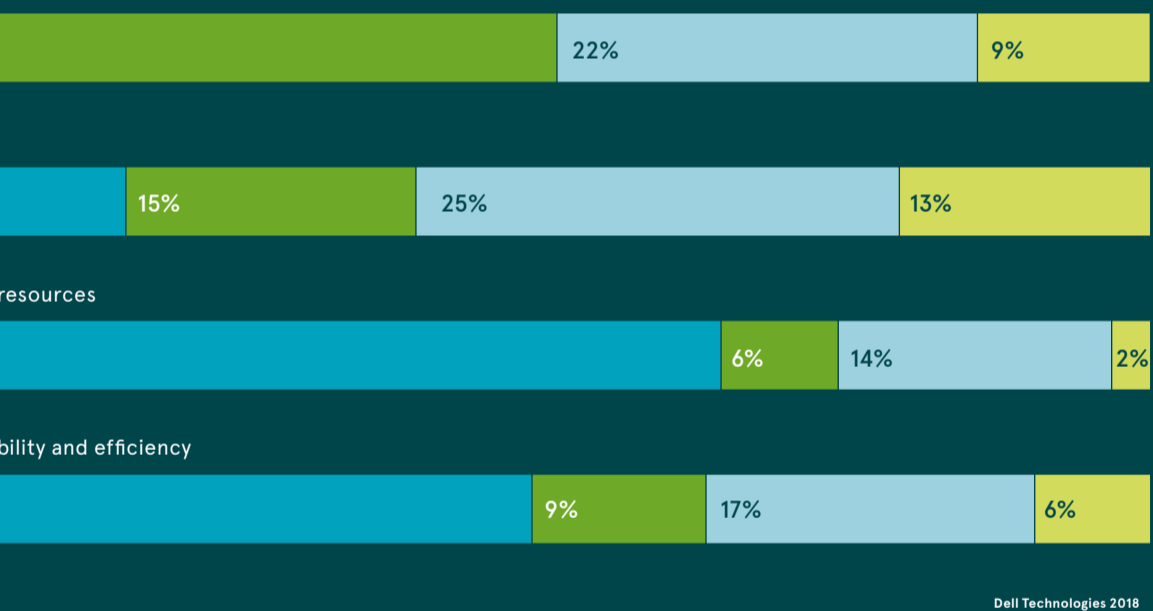




and on each of the following areas

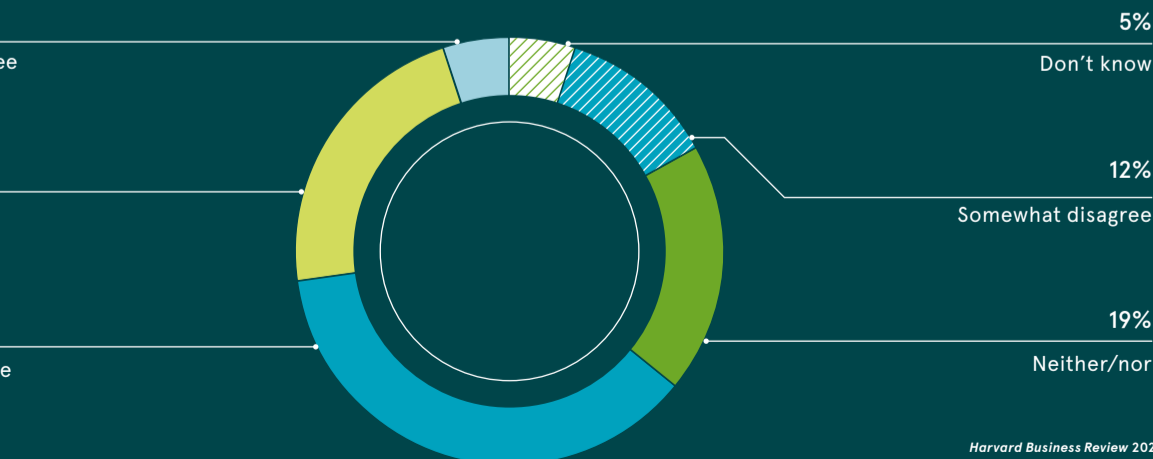


Don't know



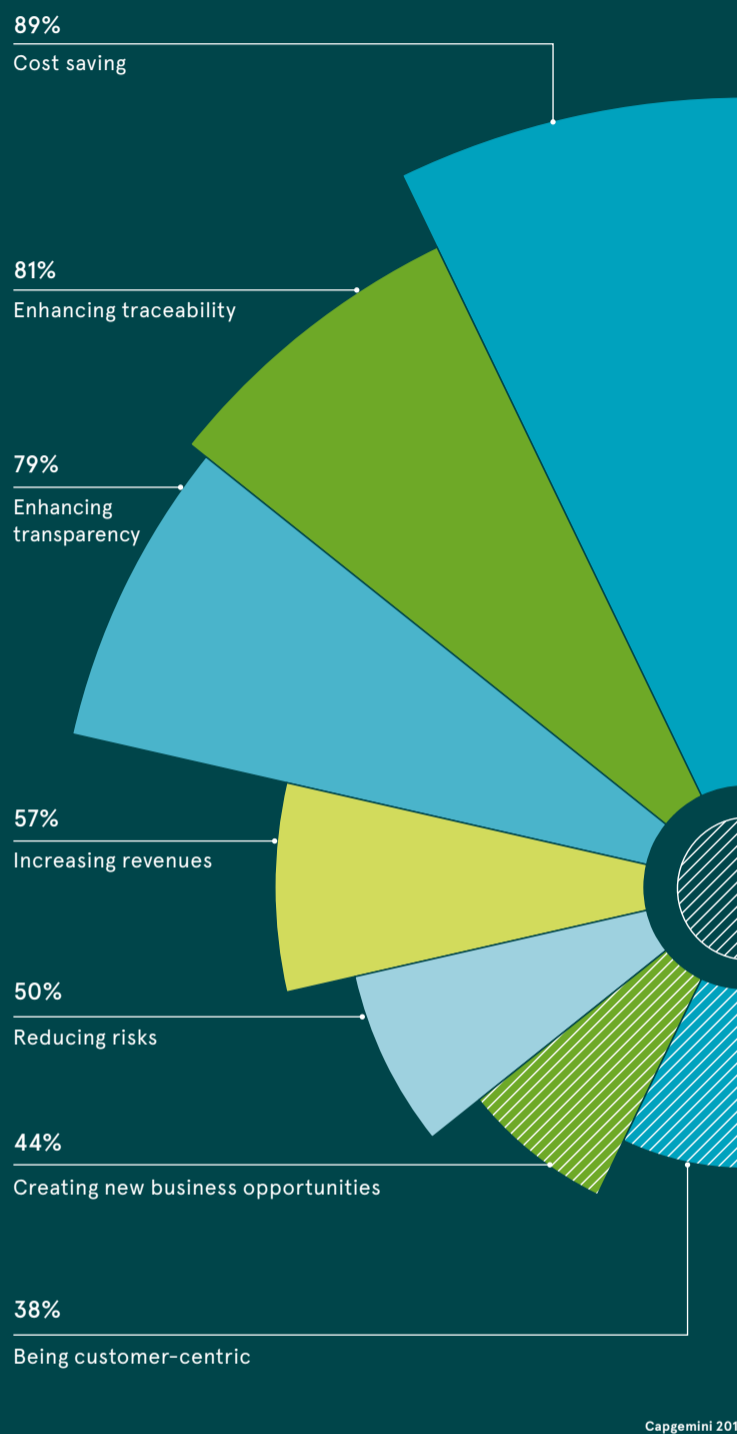
### RESPONSIBLE FOR DRIVING TRANSPARENCY?

Which business leaders agreed with the statement: "My organisation expects the procurement/finance team to identify business culture of transparency"



### BLOCKCHAIN: A SILVER BULLET TO TRANSPARENCY?

Top drivers of blockchain investments, according to supply chain managers



**56%** of supply chain and risk management industry executives do not utilise tracking tools to enable real-time reporting

**13%** alone indicate having complete visibility into the end-to-end supply chain

# New world of waste

Growing interest in sustainability has shone a spotlight on waste management

**W**aste management isn't an issue that's usually at the forefront of people's minds, which is actually a little strange when you think about it. It's an essential part of the way we live and something everyone interacts with every single day. But most people don't spend a lot of time considering what happens to their waste after it's been thrown in the bin.

Underpinning waste services is an international business ecosystem heavily reliant on global commodity prices. You might not realise it, but the value of recyclable paper in India has a direct impact on your local rubbish collections in the UK and legislation passed by individual governments can have far-reaching impacts all across the world.

For companies operating waste management and recycling services, it's important to be continually innovating and devising new solutions to meet customer demands for both good value and sustainable waste provision. Bywaters is one such company, a family-owned recycling business which has been rooted in London's East End since the 1950s.

## Changing industry

During the nearly 70 years Bywaters has been providing waste management services in London, there have been significant shifts in both international recycling infrastructure development and consumer demand for sustainability.

The renewed focus in recycling this brought about was complemented by Bywaters building a state-of-the-art Materials Recovery Facility in 2006 at a new site in Bow. Today, that facility sorts 125,000 tonnes of waste a year into more than fourteen individual waste streams, ensuring all waste is sent to the correct facilities for recycling or energy recovery.

As customer demand has moved towards all-round sustainability, Bywaters has continued to invest in making its services more environmentally friendly. In 2015, the company installed 4,000 solar panels to the roof of its facility and more recently every dustcart in their fleet was upgraded to meet Euro 6 emissions standards.

Edward Van Reenen, associate director for sustainability and environment at Bywaters, has been encouraged seeing these trends develop.

"The ongoing rise in interest in sustainability is inspired by a whole host of social and cultural factors. Influences range from *Blue Planet* and Sir David Attenborough to the climate strikes and Greta Thunberg. As a result, environmental awareness is higher now among clients and consumers than ever," he says.

## Volatile marketplace

Of course, all this has to be supported by the business remaining stable in



01

what is often a volatile marketplace. Recycling is now an international business, with global commodity prices having a huge impact on waste management companies. Recent years have seen particular volatility, with China closing its doors to accepting recycled materials in late-2017 and India announcing similar measures on accepting waste paper in 2019.

International shifts such as these cause fluctuations in the commodities market that have to be navigated by waste management companies and Bywaters keeps up with the pace by continually innovating within its services.

As recycling has become more accepted as part of daily life, consumers now look for more from their waste management providers. Bywaters' response has been to invest in a variety of sustainability innovations and work with their clients to bring about changes that go above and beyond increasing recycling rates.

## Weighing technology and data collection

In the age of big data, clients in every sector are looking for services with a

**01** Bywaters arrange regular beach cleans with their clients to keep plastic waste out of marine eco-systems, supporting their worldwide CSR initiatives

**02** Bywaters "London for London" approach has led them to invest in a Euro 6 vehicle fleet, reducing emissions on London's busy streets

demonstrable impact. Bywaters provides this for clients through using precise weighing technology to give accurate weights for all waste produced by tenants within multi-tenanted buildings. This gives customers a level of information to which they have never previously had access.

Using this data, Bywaters is able to discover which parts of each building are underperforming in terms of recycling practices, and introduce targeted measures to make sure resources and time are efficiently used where they're needed most.

In addition to using this weighing technology, Bywaters provides up-to-the-minute reporting of all waste production and environmental key performance indicators through its bespoke reporting platform, the Bywaters Reporting Analytics Dashboard (BRAD).

Making sense of big data also means measuring environmental impact. So one of the key features of BRAD demonstrates tangible benefits of sustainable waste management by tracking CO2 savings associated with increased recycling rates and diverting non-recyclable waste for energy recovery.

## Coffee cup recycling

As part of Bywaters' commitment to providing innovative recycling solutions, the company was recently awarded a grant from the Cup Fund to install reverse vending machines and other coffee cup recycling infrastructure across the campuses of three London universities.

The Cup Fund is the UK's largest grant fund to support projects that boost coffee cup recycling. The fund is provided by environmental charity Hubbub and supported by donations



02

from Starbucks introducing a 5p charge for single-use coffee cups.

Bywaters' associate director for corporate social responsibility (CSR) Siân Glover says of the project: "It's fantastic to introduce new recycling streams for our clients in the education sector and to install interactive equipment, such as reverse vending machines, to engage students and staff with sustainability initiatives."

## Partnerships and CSR

Sustainability is a global issue and clients now expect to make an international impact with their CSR initiatives. Bywaters works with clients to sponsor initiatives both in London and around the world.

Recently the company worked with one of their corporate clients in central London to plant trees with GreenPop, a charity which carries out reforestation efforts across Southern Africa and which Bywaters has been working with since the beginning of last year. Working alongside WWF, Bywaters is also helping fund the training of anti-poaching dogs in India and Nepal,

protecting tigers and fighting against the illegal wildlife trade.

Closer to home, the company provides financial support and staff volunteering hours for FoodCycle, a charity that prepares free meals for the hungry and the lonely across England using surplus food, and also supports the London Wildlife Trust, preserving local biodiversity.

Associate director, commercial, at Bywaters Sam Fairservice concludes: "This is the new world of waste. Bywaters understands that in the 21st century, it's not enough simply to provide first-class recycling services, you have to take an all-round approach to sustainability and work with clients to achieve those goals."



**As customer demand has moved towards all-round sustainability, Bywaters has continued to invest in making its services more environmentally friendly**

For more information please visit [www.bywaters.co.uk](http://www.bywaters.co.uk)

**Bywaters**  
recycling made easy



CIRCULAR ECONOMY

# Companies embracing circularity to turn a profit

As so-called “take-make-waste” business models face increasing consumer scrutiny, companies are embracing the circular economy, boosting their green credentials and turning a profit in the process

Rebecca Stewart

In 2018, IKEA unveiled a plan to become a circular business by 2030, eliminating waste with a commitment to use only renewable or salvageable materials across its entire range. Coca-Cola, which manufactures 3 million tonnes of plastic packaging a year, has since confirmed Sweden as the first market in which all its bottles will be produced from 100 per cent recyclable materials.

This is the circular economy, where reuse and recycling prevail over raw materials and extractive ways of working.

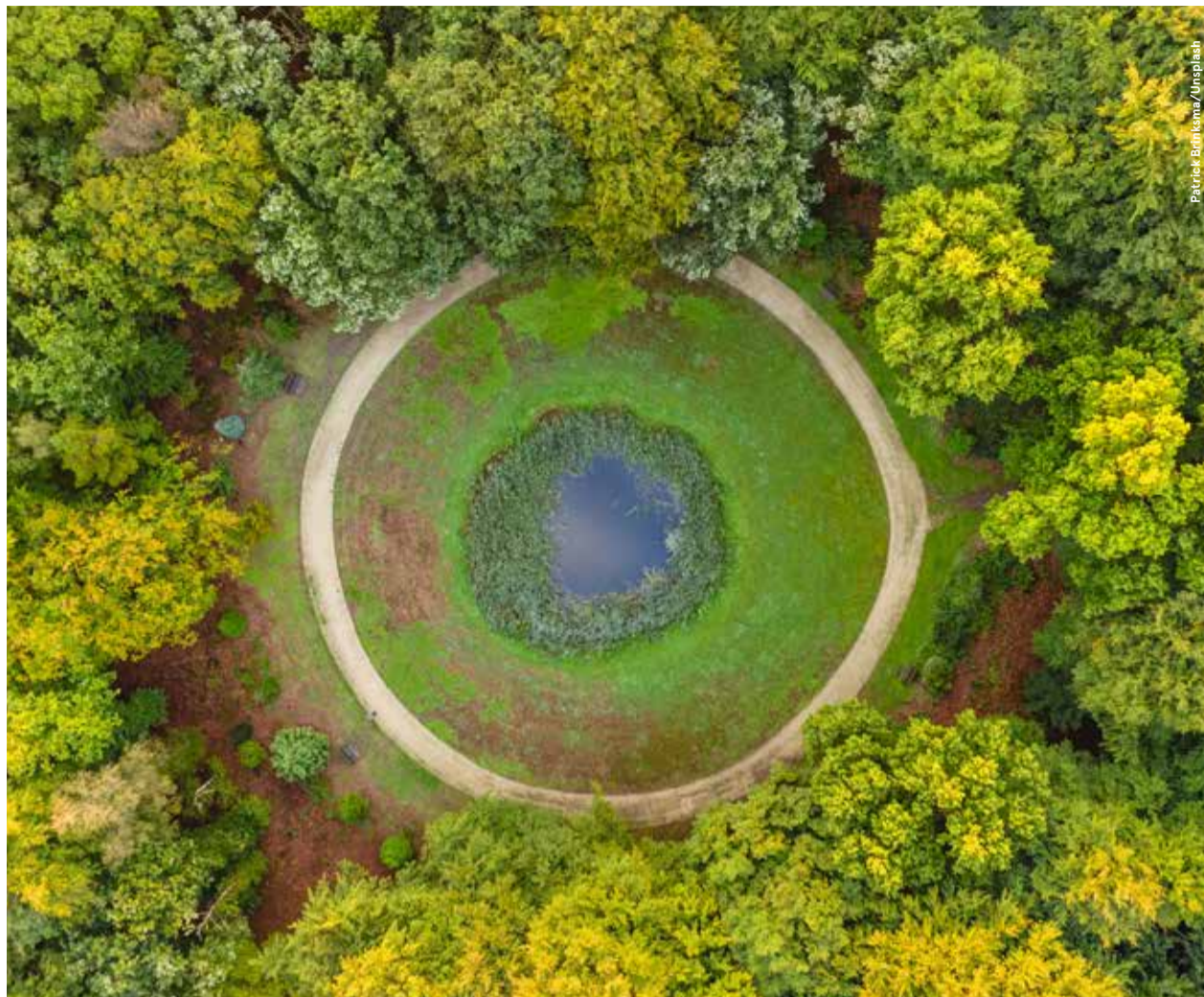
P&G, adidas and countless other household names are also changing some of their production methods and processes in a move away from a linear economy to one less reliant on natural resources.

For some companies, though, circularity is the linchpin of their entire proposition. And as well as cementing their status as an environmentally friendly business, it's an approach that can drive economic growth.

With the United Nations forecasting the world's population to reach 9.7 billion by 2050, the stress on Earth's natural resources is only set to tighten. Against this backdrop, the environmental benefits of the circular economy are clear: less waste goes into landfill and less water is used, resulting in lower greenhouse emissions.

As a new era of sustainability dawns, the business case is just as clear. A recent study from Nielsen found that 81 per cent of global customers feel strongly about companies' need to implement programmes that improve the environment.

“Once a business has established or switched to a circular process, it has the opportunity to leverage this point of difference to align with the values of the rapidly growing segment of society that are conscientious consumers,” explains Chris Norman at GOOD Agency, which advises brands on sustainable strategies.



A big business seeing the monetary benefits of doing just that is Schneider Electric. As well as using recycled content and recyclable materials in its products, the industrial engineering equipment manufacturer has been rolling out a growing range of services to help customers extend the life of ageing products. These include leasing and pay-per-use options and take-back schemes which ensure discarded apparatus doesn't end up in landfills.

Circular economy solutions now account for 12 per cent of the group's revenues. By 2021, the French-based business intends to avoid consumption of 120,000 tonnes of primary resources and cut CO<sub>2</sub> emissions at the customers' end by 120 million tonnes.

In Europe alone, applying circular economy principles could unlock £1.5 trillion of value for the economy, according to the Ellen MacArthur Foundation.

One industry ripe to capitalise on this is the renewable energy and waste management sector. Promising upstarts have already emerged in this space including Cambrian Innovation, which has developed technology that decontaminates dirty water and creates a clean biogas energy source.

Elsewhere, Finnish company Aquazone has developed its own method of upcycling wastewater into fertiliser. At the end of 2019, it was acquired by Operon Group Oy, which already boasts revenues of £11 million, showcasing the potential for profitability.

Unlike water, some materials are harder to reuse or repurpose. That's where firms like Terracycle come in. The recycling organisation provides circular economy solutions for businesses, including its zero-waste

packaging system Loop, which enables fast-moving consumer goods giants such as PepsiCo, Unilever and Nestlé to sell products in high-quality refillable containers. Customers pay a deposit for each one, plus the cost of the product inside, then notify Loop when it needs refilling.

In September 2019, the upstart's revenues rose to \$11.2 million representing a 16 per cent year-on-year growth.

Looking beyond the everyday essentials consumers pick up off the supermarket shelf, another sector looking to drive significant behavioural change through the recycling and repurposing of materials is textiles.

According to the fashion industry-led Circular Fibres Initiative, less than 1 per cent of the material used to produce clothing globally is recycled into new clothing.

Such statistics have set the stage for green activists to lead a shift away from fast fashion towards sustainable wardrobes and make space for brands such as Teemill, which has found success in repurposing old, tired clothes and open sourcing its methods.

The business has developed a circular production process that turns old T-shirts into new ones. “Companies that take natural resources out of the ground and then make products designed to be thrown away have a business model which is the equivalent of torching a car after every drive, then buying a new one,” says co-founder Mart Drake-Knight.

The entrepreneur reveals his original ambition was to make clothes using natural materials and renewable energy, but when he tried to do so “everything got more expensive”. The economy, he argues, was “set up

“Firms that use natural resources to make disposable products is the equivalent of torching a car after every drive, then buying a new one

to punish brands for trying to do the right thing”.

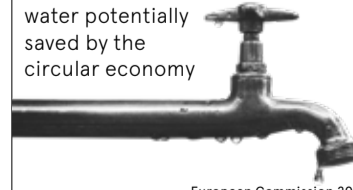
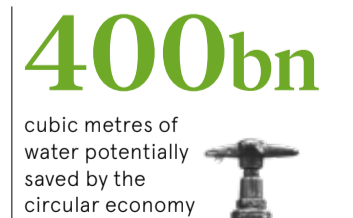
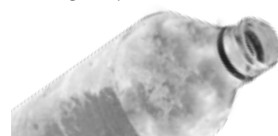
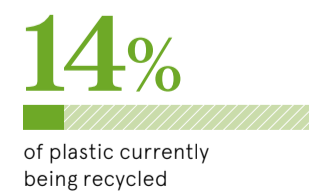
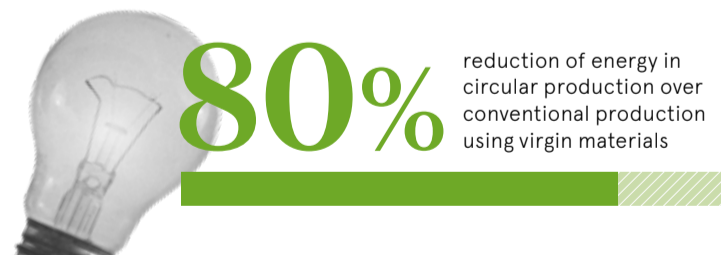
Drake-Knight doesn't reveal numbers, but says his business model is translating into financial success, saying the company has doubled in size every year since its 2018 relaunch.

Like fashion, food is an additional area where enterprises are finding success in the circular economy. Data from the Ellen MacArthur Foundation shows that 31 per cent of food produced in the UK is lost or wasted, both throughout the value chain and as consumer waste.

Toast Ale is looking to tackle the issue in a novel way, turning one of the most frequently wasted food-stuffs, bread, into beer.

The business was on course to hit £1-million revenue in 2019, according to founder Tristram Stuart, who has credited the “good mark-up from grain to beer” for its gains.

What's certain is companies embedding circularity within their business are finding ways to save the planet and turn a profit at the same time, something that's not hard to raise a toast to. ●



European Commission 2019



## GREENWASHING

# Greenwashing: why small eco steps should be praised

Are McDonald's paper straws simply a marketing move or a small step in a green direction? And are accusations of greenwashing getting in the way of real environmental change?

Marina Gerner

**W**e often see businesses accused of greenwashing in the media. McDonald's was questioned about its decision to get rid of plastic straws, while having a business model reliant on animal agriculture, a huge contributor to greenhouse gases. Elsewhere, H&M has been pushing its Conscious Collection, while remaining a fast-fashion business and therefore naturally unsustainable.

But is this really greenwashing? And, if so, is it always a bad thing? Take McDonald's. The fast-food chain uses 1.8 million straws a day in the UK. Their move to axe plastic straws in favour of paper ones chimes with the European Union's vote to ban single-use plastics by 2021. It also serves to enhance their brand image. After all, plastic straws have become the symbolic go-to product of green consciousness.

But nobody claimed the fast-food chain would switch their burgers to plant-based protein. Greenwashing is "disinformation disseminated by an organisation so as to present an environmentally responsible public image", according to the *Oxford*

*Dictionary*. There's a difference between deceptive disinformation and taking a small step in the direction of sustainability.

The problem, it later transpired, was that their paper straws are not recyclable as they're too thick for the recycling infrastructure currently in place. But the company says it is looking for a solution to the problem.

Can a fast-fashion company have a sustainable collection? "In the fashion industry, we're very good at calling out what companies aren't doing, as opposed to what they are doing," says Erica Charles, lecturer at the British School of Fashion of GCU London. Big fashion companies are juggernauts, she notes, that are not as agile as fashion small and medium-sized enterprises (SMEs). They therefore require more time to make changes.

"My personal opinion is these little steps are positive because it forces other organisations to do something as opposed to nothing at all," she says. A small percentage change at a large company still has a significant "impact and ripple effect on the rest of the industry to review their approach to business".

When cases of greenwashing come to light and are debated, Charles says, "it's actually a positive thing in the sense that some of the startups and SMEs emerging in the fashion industry have to make sure they do responsible business".

But while it is vital for people to call out brands on their practices and demand they do better, it's also crucial that call-out culture doesn't deter companies from trying at all.

Let's not forget that almost nothing is fully sustainable. Electric cars and solar batteries require the mining of rare metals. Paper straws



Andrew Heraschenko, Unsplash

are greener than plastic, but they're still shipped across the world on the back of fossil fuels. Most "green" choices have unintended consequences in the supply chain. That's not to say green attempts are worthless, just that there are different degrees of sustainability.

What about greenwashing in the world of investment? Environmental, social and governance (ESG) factors have rapidly gained currency as a buzzword. But it's not always what it seems. The

absence of negative filters, which filter out weapons or tobacco investments, for example, means supposedly "responsible" funds can sometimes contain investments most people would not consider socially responsible. Such cases need to be called out and addressed.

"I see a lot of greenwashing among investment fund managers, who say they've always focused on ESG, when they've only ever focused on the G," says Ben Yearsley, director at Shore Financial Planning. In other words, focusing on governance issues, such as a company's ownership structure or gender equality, doesn't necessarily mean they're helping the environment.

"ESG is a fad now, but it will be the norm in five years' time," he says. But are all industries "ESG-able"? Yearsley says tobacco isn't, as "it has no useful purpose; it does no good". However, when it comes to oil and gas companies, he says: "We are relying on fossil fuels for the next few years, and we need Shell and BP to be the next energy companies."

“

**These little steps are positive because it forces other organisations to do something as opposed to nothing at all**

1.8m

McDonald's straws used every day in the UK

European Commission 2019



He cites Ørsted as an example, which used to be a Danish oil company, and is now a large provider of wind energy.

While deceitful greenwashing is unethical, small sustainable steps are laudable. So, what is the most acceptable way for businesses to communicate and celebrate mini-wins for sustainability, without being seen to be greenwashing or glossing over areas that still need improvement?

What it comes down to is transparency and honesty. "We're in a transition of change and change takes time," says Charles. "But if an organisation is categorically just trying to deceive consumers and jump on a bandwagon, then they deserve to be called out."

If, on the other hand, a company is making a small improvement, transparency is key. It's a good idea to present small changes for what they are, without purporting to be the sole fulfiller of the United Nations' Sustainable Development Goals. Another solution is to publicise sustainable products once they actually make up a substantial part of a company's function and revenue.

People increasingly demand that companies make positive changes. The majority (73 per cent) of consumers worldwide say they would change their consumption habits to reduce their impact on the environment, according to research by Nielsen. So companies have a huge opportunity to reap the benefits of sustainable business practices.

Ultimately, people influence what companies produce, and vice versa, and positive reinforcement is productive. So rather than shaming people for flying, it makes more sense to demand eco-friendly fuel becomes the norm in aviation. After all, it's about creating an environment that encourages innovation. ●



## 'Companies now understand they must engage with those whose lives they impact'

One are the days when discussions of sustainability risks and opportunities for business were the preserve of the few. In fact, it's rare for a week to go by without another company committing to reduce greenhouse gas emissions to zero, minimise the use of plastic or ensure suppliers subscribe to new labour standards. At the same time, governments are calling for more progress and legislation is changing rapidly.

Sustainability is no longer a buzzword trend. We're seeing a revolution in how we work, with leading companies choosing to put sustainability at their core. Having worked in the sector for more than 30 years, I find this transformation in attitudes and behaviours remarkable.

The time when corporate responsibility and sustainability were seen as longhand for charitable donations and environmental management activities, or a distraction from increasing profit and boosting the share price, is long past. Increasingly, corporate success is defined by a broader range of measures that go beyond the financial and embrace social, environmental and ethical impacts.

A key driver in this change is a shift in focus from shareholders to stakeholders. Companies now understand they must engage with those whose lives they impact. This has been greatly helped by institutional investors who, with their increasing interest in environmental and social performance, have challenged boards to look beyond the short term.

Leading businesses now recognise that purpose is as important as profit. However, this doesn't make things easier as corporates must now make difficult decisions, which in turn must be supported by the right resources, financial, human and intellectual.

Although this may be hard, the next steps are vital. Prioritise the issues that are truly material to a business and avoid knee jerks or gut reactions. I don't advocate a slowing down in momentum, but for considered decision-making based on professional expertise and an understanding of all stakeholders, not just the most vociferous.

Given the scale and complexity of the challenges, even the largest global businesses will struggle to address them alone. Collaboration is key as it enables us to share insights and

develop innovative solutions that benefit all.

We're starting to see some really groundbreaking partnerships, which draw on the knowledge and experience of the private and public sectors, NGOs and academia. Traditional barriers to NGO-private sector partnerships are gradually being broken down. Companies must now work collaboratively with their competitors to succeed.

Our ideas of what represents best practice are changing rapidly. Those involved in setting and implementing strategy need to be experts, equipped with the most up-to-date knowledge. Sustainability expertise must be recognised and recruited in the same way we'd recruit accountants or human resources professionals, while ensuring other business functions understand sustainability.

All this requires change. The Institute of Corporate Responsibility and Sustainability (ICRS) supports the evolving sustainability industry by setting a framework for core competencies, sharing best practice and pooling knowledge. We mentor those who are just starting out and provide recognition for those leading the way. We provide a platform to share ideas, celebrate what's good and challenge what needs to change.

Put simply, our aim is to ensure individuals and organisations can put words into action, converting corporate responsibility and sustainability aspirations into meaningful achievements, for themselves and for the world we live in.

We still have much to do, but the realisation that sustainability is now integral to business success, and supported by dedicated and knowledgeable professionals, fills me with hope for the future. ●



**Anita Longley**  
Chair  
ICRS



## Time is now for action on sustainability

If science shows us we've limited time to dial down on carbon emissions, while the likes of Greta Thunberg, Sir David Attenborough and Extinction Rebellion dial up the awareness, it's environmental consultants who will help articulate these sentiments in businesses worldwide

Up and down the country in every office, factory, warehouse and home, the argument over whether we face a climate crisis and a deteriorating natural environment has largely been won. The issue has permeated boardrooms and dining rooms, headlines the C-suite agenda and that of the global investment industry. Few need convincing. Now the need for action, delivering real change, is palpable.

"ESG, or environmental, social and governance, issues were once sustainability footnotes on due diligence reports, but not anymore. Times are changing very rapidly. Companies don't want to wait for new government policies or COP26, they want to do something right now," says Alex Ferguson, managing director of Delta Simons, who has 25 years of experience in the sector.

"Yet many, especially small and medium-sized enterprises, or SMEs, are worried about doing the right thing, while being concerned about doing the wrong thing. Our role as environmental consultants is to make sure they turn ideas into actions that are right for

their business, however small, and at least start making a difference. There is always something a company can do and they can start today."

The UK market for environmental consultancy services is growing, hitting a record £1.8 billion in 2018, according to a report by Environment Analyst. Rates of 4 to 5 per cent are expected in 2019 and 2020, dampened by the impact of UK-European Union trade negotiations as Brexit beds in, but still ticking up faster than the economy as a whole.

"Businesses are keeping themselves lean, with little extra capacity. Right now, it isn't the easiest of economic times. But concerns over ESG are not going away. In some cases, investing in these issues, especially those that focus on energy, waste or the circular economy, can make a difference to the bottom line," says Ferguson, whose company works with some of the world's biggest technology and logistics providers through its global Inogen network. In addition, Delta Simons works across the UK with clients such as Tesco and Aviva, and on a local scale with organisations like the Cambridge Half Marathon.

"It's about offering clients a toolkit of services. Not every company can translate all 17 of the United Nation's Sustainable Development Goals, or SDGs, into tangible business and productivity goals. Instead it's valuable to focus on a few. It's also not worth getting hung up over countless metrics. The key element in this is people. Your staff need to be inspired to be part of this change," adds Ferguson.

Climate and eco-anxiety is now a real phenomenon, particularly prevalent among the young. This is driving change and providing an opportunity for businesses to engage with their workforce.

"Many people feel powerless, in the wake of countless media feeds, whether it is on the Australian bush fires or melting Antarctic glaciers. Empowering these people is something that businesses can now do every day. With the right vision, training and engagement, companies can retain and recruit the next generation of talent if you're addressing their concerns about the environment," explains Ferguson.

The industry for environmental consultancy is seeing a significant service evolution with due diligence extending into strategic management advice. For corporations, the focus has also shifted from ESG seen as a cost, to being very relevant to today's marketplace and realising future business continuity.

"The key element is that projects do not have to be complicated. We now know what works and we can translate that into success. We find ideas that work in one business and realise these in another. I am passionate that so much more can be achieved," Ferguson concludes.



Now the need for action, delivering real change, is palpable

To find out more please go to  
[www.deltasimons.com](http://www.deltasimons.com)



## ELECTRIC VEHICLES

# What's putting the brakes on EV sales?

Although the drive towards electric cars continues to accelerate, questions are being asked about their environmental credentials and whether they really are the long-term future

Mark Hillsdon

**E**lectric vehicles, or EVs, are often billed as game-changers, a way of meeting our need to be mobile without the emissions that come from traditional internal combustion engines. Yet their take-up remains relatively slow, with consumers beset by so-called range anxiety and worries about a recharging infrastructure still in its infancy. Meanwhile, sceptics even question the veracity of EVs' green credentials.

While they may have zero tailpipe emissions, every Nissan Leaf and BMW i3 does come with embodied emissions, much of it wound up in the extraction and transportation of the rare-earth metals at the core of EV batteries. Mining these minerals is often mired in other environmental and human rights controversies, too.

As Amnesty International's secretary general Kumi Naidoo says: "Finding effective solutions to the climate crisis is an absolute imperative and electric cars have an important role to play in this. But without radical changes, the batteries which power green vehicles will continue to be tainted by human rights abuses."

EV sceptics also point to the fossil fuels burnt to create the electricity needed to run them, but this is



where EVs start to fight back, thanks to the increasing decarbonisation of energy supplies.

According to Helen Perry, Nissan Europe's head of EVs, once you compare the combined embodied and operating emissions of a conventional car and an EV, the latter is far more environmentally friendly.

"The battery and manufacturing phase of the vehicle's life contributes a significant proportion of the overall result. But, of course, once in use an EV has zero tailpipe emissions," she says. "The shift from fossil-fuel power stations to renewable and other energy sources means the contribution to overall life-cycle emissions from charging the vehicle continues to rapidly decrease."



**There is no silver bullet to tackling emissions, but EVs will be a core part of what's needed and the energy grid is ready to power them**

There are other ways that EVs are cutting their carbon footprint. Lightweighting is a process that makes products lighter by reducing the amount of materials used to make them or by transitioning to lighter alternatives.

There are also moves to cut the carbon associated with transporting components from all over the world by sourcing and manufacturing locally. Tesla is leading the way with its Gigafactory, a massive EV and lithium-ion battery assembly plant in Nevada, with a second currently being built in Germany.

Companies are also starting to do clever things with batteries. Volvo is investigating ways in which it can integrate battery components into

the vehicle body to reduce weight, while Renault is using electro-magnets, which don't need rare-earth metals, in their engines.

And with so much of the cost of an EV tied up in the battery, research is also ongoing into fuel cells, which produce electricity through a reaction between oxygen and hydrogen, and could eventually replace both conventional engines and batteries.

So what's holding back faster growth of the EV market? "It's no secret that despite the attractive proposition EVs have always posed to consumers looking for a greener, more ethical alternative to petrol and diesel, actually buying one hasn't always been an easy choice to make," says Richard Seale, lead automotive designer at design agency Seymourpowell.

While Seale points to the likes of Tesla, Porsche and BMW delivering "blistering performance" in terms of design, there are still barriers to purchasing an EV, he says. "They are still not cheap, there is not an extensive second-hand market and range anxiety still plays a part. But the big one for me is the charging infrastructure," he adds.

Perry believes there are numerous incentives that can be introduced to help increase the take-up, such as discounted charging, road tax exemption and plug-in car grant. She agrees charging remains a deciding factor for many, but also sees changes ahead.

"With more brands and models entering the EV market, more people are likely to consider buying

## Electrifying the Orkneys

"We have more charging stations than we have petrol stations," says Darren Richardson, proud head of infrastructure at Orkney Islands Council.

The Orkneys are on the frontline of electric vehicle (EV) adoption in the UK, with 2 per cent of all cars owned on the archipelago off Scotland's west coast powered by green electricity. Five hundred wind turbines dotted across the islands now provide 100 per cent of the Orkney's energy.

As well as around 200 EVs, electric taxis, buses and commercial vans also make use of the charging infrastructure, which currently stands at 33 stations, and will edge closer

to 40 by the end of the year. It costs as little as £2 to drive the 60 miles from the northern tip of the main island to the south, around a quarter of the price it costs in a conventional car.

There's also an entrepreneurial spirit among the islanders that has seen EVs made available for tourists to rent and a flourishing second-hand market, with Orcadians able to buy a first-generation EV for around £3,000, safe in the knowledge that even with its limited range, "you're never far enough away from a charging station that you'd be stranded", says Richardson.



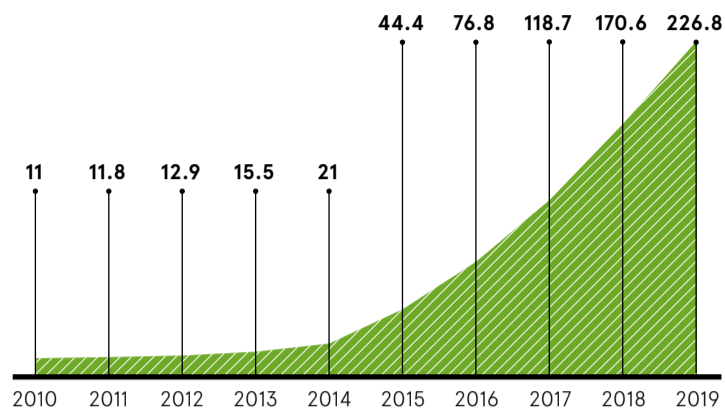
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## APPETITE FOR ELECTRIC VEHICLES IN THE UK STILL ON THE RISE

Number of licensed ultra-low emission vehicles in the UK, in thousands



Department for Transport 2019

one. Over time, this will benefit everyone by stimulating growth in the EV and charging infrastructure market as a whole and, as volumes rise, will help to bring prices down," she says.

Although the impact of EVs on consumers takes centre stage, commercial vehicles will also be affected by policies such as the UK government's Road to Zero strategy, which aims for at least half of all new vehicles to be ultra-low emission by 2030, as well as implementation of clean air zones in major cities.

Hitachi Capital Vehicle Solutions is part of Optimise Prime, the world's largest commercial EV project, which is looking at how to help UK companies overcome barriers to electrifying their fleet.

"The cost of electric or alternate-fuelled commercial vehicles and the infrastructure to support the transition will undoubtedly be a major investment for fleets," says the company's managing director Jon Lawes. "However, this cost will almost always be exceeded by the running of a diesel fleet."

Hitachi's research shows that with more than 65.7 billion miles commercial vehicles travelled each year in the UK, the fuel savings would total approximately £13.7 billion if all fleets transitioned to alternative fuels. "The key is to help businesses recognise that it isn't just beneficial for the environment, but cost effective as well," says Lawes.

But can the UK's electricity system meet the demand for a new

generation of EVs? Nicola Shaw, executive director at the National Grid, believes so. "Most journeys we make are relatively short – the average car does around 30 miles a day – but when we buy a car, we expect it to make some longer journeys too," she says. "To help people feel confident to choose an EV and to ease worries about running out of charge, we need the right charging infrastructure.

"That's why National Grid is asking the government to commit to a nationwide ultra-rapid charging network, to put over 99 per cent of drivers within 50 miles of a hub that will charge an EV in the time it takes to pick up a cup of coffee.

"There is no silver bullet to tackling emissions, but EVs will be a core part of what's needed and the energy grid is ready to power them."

Seymourpowell's Seale also believes there is a lot to be learnt from China, particularly in the way it incentivises EVs, while actively disincentivising petrol and diesel. China wants alternatively fuelled vehicles to hit 20 per cent of all new vehicle sales by 2025. To achieve this it is putting considerable barriers in the way of conventional car owners, such as forcing them to enter a lottery to gain a registration for their vehicle; there are no such hurdles for EV ownership.

"Choosing an EV allows you to be part of a growing infrastructure of clean energy, an infrastructure that is only getting better," he says. "Choosing an EV allows a consumer to become part of the solution." ●



Andrew Roberts, Unsplash




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## ENVIRONMENT

# Questioning 5G's footprint



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Concerns of a potential surge in e-waste and energy demand could dampen excitement during the rollout of 5G, but experts remain optimistic

Oliver Pickup

**A**way from the giddy fanfare heralding the advent of fifth-generation wireless technology for digital cellular networks, has there been enough sober contemplation of 5G's environmental impact?

Consider that by the end of 2025, 5G will attract 2.6 billion subscriptions, generating 45 per cent of the world's total mobile traffic data, according to the *Ericsson Mobility Report 2019*, published in November. By connecting with up to 65 per cent of the globe's population in just a handful of years, 5G is on course to become the fastest-developing mobile communication technology ever rolled out.

However, in these times of heightened climate awareness, such a speedy achievement may not be

cause for celebration. Indeed, what would teenage eco-activist Greta Thunberg, born in Stockholm, the headquarters of telecommunications giant Ericsson, coincidentally, think about 5G's environmental impact?

The latest figures from the GSM Association show the telecoms industry currently consumes around 3 per cent of global energy. But as Per Lindberg, chief executive at Ranplan Wireless, points out: "The onset and rollout of 5G globally could result in a potential increase in data traffic of up to a thousand times. Additionally, the infrastructure to cope with the 5G era could arguably consume up to three times as much energy."

Indeed, a report, published last spring by Vertiv and technology

analyst firm 451 Research, estimates that network energy consumption could jump 170 per cent by 2026, with 90 per cent of operators expressing their concern. The study projects that in 2030 information technology will consume one fifth of all global

“The onset and rollout of 5G globally could result in a potential increase in data traffic of up to a thousand times

electricity. "As demand for connectivity continues to skyrocket so too does the energy consumption of telco operators," warns Jon Abbott, technologies director for global strategic telecom clients at Vertiv.

Clearly, as 5G networks reach new markets, and existing network traffic increases, growth management is critical to achieving a better energy performance. Some claim 5G's environmental impact and, at first glance, lack of ethical appeal could damage its mass business-to-consumer adoption.

"Unfortunately, consumers will need to replace their current 4G phone with the 5G-compatible one, which means ditching a perfectly working phone," says Matthew Moreton, managing director at mobile phone comparison site Compare and Recycle. "Fears over e-waste issues among eco-conscious consumers most likely will slow down the adoption of 5G if device buyback programmes are not enforced and there's no actionable plan for the decommissioned devices beyond recycling centres."

Many experts, though, are hopeful that once the infrastructure is in place, 5G energy efficiency will significantly improve. Mark Skilton, professor of practice in information systems and management, at Warwick Business School, says: "Technology can enable 5G to own the green revolution because of the nature of the increased speed in data sensors that will create an effective real-time system.

"We will see radical new business models emerge for how everything from streetlights, home heating to energy and water consumption is monitored and managed. These innovative models will move away from the slow process control and poor visibility, and often no tracking of consumption, that we currently have."

Skilton points out that research from Enzen Global, a smart energy consultancy, has shown smart sensor networks can level up numerous green efficiencies, from detecting water leaks to monitoring pollution levels. "5G will be able to turn off inactive systems or optimise water consumption to provide a better balance of demand and supply," he says. "Today this simply is not possible without the investment and specialised networks that make widescale use of the internet of things (IoT) affordable."

Paul Marshall, chief technology officer and founder of IoT specialist Eseye, goes as far as to predict 5G will be the first carbon-neutral network. "The energy-saving potential of 5G connectivity, coupled with IoT technology, is huge," he says. "Better-connected devices, armed with data provided to them every second, allows for autonomous operation.

"It is this autonomy that will usher in a reduction in energy usage as more and more devices will be able to shut down when not in use to conserve energy, then powering up again in time for when they are required, without any human input."

# 3%

of all global energy consumed by telecoms industry

GSM Association 2019

# 170%

predicted jump in network energy consumption by 2026

Vertiv/451 Research 2019

Should network providers be responsible for 5G's environmental impact? Kirsty McKell, associate director of Carbon Intelligence, certainly thinks so. "Pleasingly, we see a rise in commitment from the UK's largest telecommunications firms; clients Vodafone and BT have committed to ambitious targets to procure 100 per cent renewable energy, as part of global initiative RE100," she says.

Christopher Nurko, chief innovation officer at Interbrand Group, is equally optimistic that 5G's environmental impact will be a force for good, and could even halt and reverse climate change, eventually. He says: "The rollout of 5G globally will provide us with the ability to diagnose, predict, optimise and measure the impact of every decision through data.

"As it becomes more widespread, we will be able to deploy this to protect the environment, guard resources and promote long-term sustainable activities for positive economic and social outcomes. The scale of this has potential to be massive. BT, for example, has calculated deployment of 5G could reduce CO<sub>2</sub> emissions by 1.5 gigatonnes by 2030, more than a third of the European Union's emissions in 2012."

This progressive attitude is echoed by Richard Baker, chief executive of GeoSpock, who adds: "Historically humankind has attempted to bend the world to suit our needs, but IoT in combination with 5G gives us the capability to fully grasp our environmental impact and react accordingly. For the first time, we'll have the evidence to make the best possible decisions."

Perhaps Greta and her followers should be rejoicing about the rollout of 5G, after all. ●



# Clean and green: the marriage made in sustainable heaven

Low-carbon aluminium is central to combating climate change

**A**luminium is ever present in our lives. It lives in the gadgets we use to stay in touch, the packaging we handle, the cars we drive and our lives are, undoubtedly, enriched by its use. However, the only time we give it a moment's thought is when we're recycling it, which leads to a public perception that in a world of waste and pollution, it's one of the good guys.

However, when it comes to the environment, the truth is that aluminium has a split personality. It's one of the world's most sustainable metals because of its entirely recyclable properties and its lightweight profile means it has a significant impact when it comes to the carbon footprint of certain types of manufacturing.

But the metal also goes by another name – solid electricity – because of the huge amounts of power required to electrolyse alumina powder and transform it into the metal. Alarmingly, almost 80 per cent of all greenhouse gas emissions in the aluminium

industry globally can be traced back to smelting and it's this energy-intensive process that has limited the metal's carbon-free credentials.

Now Russia-based RUSAL, part of En+ Group, one of the world's major aluminium producers, is on a mission to make the production of the metal more sustainable.

RUSAL has given this aluminium a name: ALLOW. Every shipment comes with an independently verified carbon-footprint statement from its smelter of origin, which means customers can guarantee the product contains less than 4t CO<sub>2</sub> per tonne of aluminium, which is four to five times lower than the CO<sub>2</sub> footprint of aluminium produced from a coal-based smelter (scope 1 and 2 only).

To do this RUSAL are capitalising on the geography of their smelters to craft their aluminium from renewable hydropower from Siberian rivers, rather than fossil-fuelled power stations, drastically reducing the environmental footprint of



Siberia, where most of RUSAL's smelters are located

the metal and making the company the largest producer of low-carbon aluminium in the world.

"Aluminium is only as 'green' as the power source used to make it," says Mark Hansen, chief executive of Metals trader Concord Resources Ltd. "Aluminium smelters are expensive, huge pieces of industrial infrastructure. There has not been a new one built in the West in many years. However, some were designed to use hydro and the commodities industry is moving in the direction of more transparency on sources of supply and analysing those chains. We have recently begun a carbon tracking initiative to monitor the sourcing so that end customers can understand where their products come from and how they touch different carbon sources."

RUSAL operate six smelters throughout Siberia that are all powered by localised hydropower plants.

"Hydropower is the energy source for over 90 per cent of all of RUSAL's operations," says Evgenii Nikitin, RUSAL's chief executive. "RUSAL's longer-term goal is to reach 95 per cent of carbon-free power in the company's energy mix by 2025, and focus our efforts on perfecting the lowest carbon aluminium possible through enhancing new top-notch technologies and developing our proper technological solutions."

In general, demand for aluminium is expected to rise by around 4 per cent a year over the next five years. It's even higher in the motor industry, where the annual growth forecast is 10 to 20 per cent as car manufacturers place increasing importance on lightweight vehicles to reduce emissions and so are switching from denser steel to aluminium.

RUSAL has looked at the impact of ALLOW in the context of car manufacturing and found it can make a significant contribution to climate-conscious

motoring when it's used in body parts.

RUSAL's *Driving Better Material Choices for Automobiles* whitepaper found that low-CO<sub>2</sub> aluminium can offset CO<sub>2</sub> production inputs in less than one year of driving.

This is particularly relevant as, according to an industry study, the average aluminium content in a car will reach 200kg by 2028, up from 130kg currently, and commitments are being made by industry heavyweights such as Daimler, which is repurposing its raw-material supply chain towards sustainability.

Of course, it's not just the automotive industry that can take advantage of the low-carbon aluminium revolution as electronics and packaging industries can also benefit. Food and beverage industries will be able to reduce the carbon footprint of their products by making cans, bottles and other packaging materials from it.

Companies, such as Danish brewer Carlsberg, are setting themselves ambitious carbon-neutral goals in the years ahead and, with packaging accounting for 40 per cent of the company's total carbon footprint, they realise that reducing the environmental impact of the aluminium they use must become a priority.

Tech firms too will be able to satisfy the growing consumer need to know the product they are buying is in keeping with efforts to leave as low a carbon footprint behind as possible. Whether it's a flatscreen TV or wearable tech, products will come with in-built recyclability once obsolete.

Finally, the benefits of low-carbon aluminium could be game-changing for the construction industry, where sustainability is set to become a core element of policy for decades to come.

"Energy consumed in buildings accounts for 50 per cent of city emissions on average, and as much as 75

per cent for many cities worldwide," says Cécile Faraud, Clean Construction Programme Manager at C40, the sustainability-focussed network made up of the world's megacities.

So the materials we use to house an exploding urban population will have a dramatic effect on a city's future sustainability, whether it's municipal buildings, private-sector corporate office space or private housing and using low-carbon aluminium in these buildings guarantees investments made today can have a climate impact in the future.

To meet the coming climate challenges, it's big players such as RUSAL that are instigating a collective vision beyond their own company borders, which is why RUSAL's commitment to a greener future doesn't end with its own hydropowered smelters.

The company is also a signatory of the Aluminium Stewardship Initiative (ASI), a non-governmental industry organisation of 55 members, including other industry leaders, national aluminium councils, technology companies, as well as aluminium-intensive firms across all major industries.

One of the goals of ASI is to verify sustainable aluminium production in the same way as sustainably harvested timber or organic food, and work to ensure the production and use of environmentally friendly aluminium as a global climate solution is backed up by full transparency across its entire lifespan.

With sustainability set to become the cornerstone of global industrial policy for decades to come, RUSAL is positioning itself as one of the leading players in the mission to turn aluminium from a contributor to the climate-change problem into part of the solution.

95%

of RUSAL's energy mix will be carbon-free power by 2025, according to their longer-term goal

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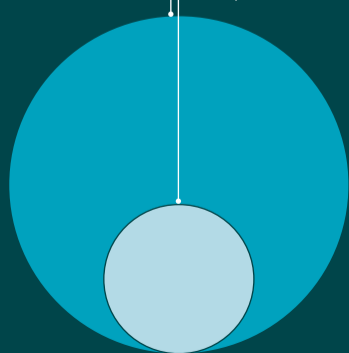
Production impact of low-carbon aluminium is almost six times lower than the industry average

13.4

world average for GHG emissions smelter (T CO<sub>2</sub> eq/T Al – Scope 1&2)

2.6

ALLOW for GHG emissions smelter (T CO<sub>2</sub> eq/T Al – Scope 1&2)



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## FOOD LABELS

# Appetite for change

An initiative to add environmental information to food labels is shaking up the industry, but is this something consumers really want?

Rich McEachran

**H**ave you wondered about the amount of carbon emitted to produce your favourite burger patty, sausage or ready-made lasagne and have it transported to a local supermarket? Soon you may no longer need to wonder.

In January, the plant-based, meat-alternatives manufacturer Quorn announced it was launching carbon footprint food labels. While the carbon footprint information is currently only available online, it's expected to be rolled out to physical packaging later in the year.

According to Quorn, its customers are actively looking to reduce the impact eating and shopping habits may be having on the environment. The labels will be a tool that helps them make more informed, smarter decisions.

It appears the appetite for carbon footprint food labels isn't limited to loyal fans of the Quorn brand either. Research published last year by the Carbon Trust, which will be responsible for certifying Quorn's data, showed two thirds (67 per cent) of more than 9,000 people surveyed supported the idea of a standardised carbon label. However, 52 per cent admitted the carbon footprint of food is not something they currently think about when buying products.

The move by Quorn isn't a first for the industry. In 2007,

PepsiCo measured and displayed carbon footprint data on packets of Walkers crisps, bottles of Tropicana orange juice and boxes of Quaker Oats, albeit for a short while. That same year, Tesco announced it was to roll out similar carbon footprint food labels on thousands of its products.

Despite the supermarket's best intentions, the scheme was short lived and ended in 2012. One of the reasons cited at the time of the withdrawal was the lack of other supermarkets following suit meant the labels didn't have the desired impact with consumers.

Then-climate change director at Tesco Helen Fleming told the food and drink industry magazine *The Grocer*: "We expected that other retailers would move quickly to do it as well, giving it critical mass, but that hasn't happened."

# 67%

of more than 9,000 people surveyed support the idea of a standardised carbon food label

Carbon Trust 2019



Fast forward and the likes of Premier Foods and Nestlé are now reportedly considering adding carbon footprint data to their products.

If the retail climate is now riper for carbon footprint food labels than it was in 2007, the success or failure of any scheme is ultimately going to hinge on whether it leads to an increase or drop in sales.

"We know consumers are increasingly interested in the provenance of their food and there's been significant growth in manufacturers using solutions like blockchain to help consumers understand the journey their food has taken. But we need to consider if carbon footprint labelling is really going to encourage shoppers to make different, more sustainable, purchasing

decisions," says Dominic Watkins, head of food and retail at global law firm DWF.

How the information is displayed will be key to how consumers respond to labels. In theory, a colour-coded grading system, or climate score, would make it easy for consumers to digest the information and help them to compare the environmental impact of different products.

That said, while consumers may be aware that green signifies a good score and red poor, there can often be a disconnect between the information presented to them and the facts they need to make an informed decision, argues Mark Dodds, chair of the Chartered Institute of Marketing's food, drink and agriculture sector interest group.

"Like we've seen with the traffic light [nutrition] labelling of food, consumers don't always understand the meaning of what they're reading," he says. "There has also been a debate on what constitutes 'good' and 'bad'."

Dodds believes there's a need for a large-scale education programme, where the difference between a good and poor score is communicated to consumers properly.

On top of this, says Watkins, the practical challenge is there's currently no easy, uniform way to calculate carbon footprints; the manner in which it's measured will need to be made more explicit. There are many factors that can determine a product or ingredient's overall environmental impact. How much water was used to raise livestock? What animal feed was used? Were crops sprayed with fertiliser? Was refrigeration required during transportation?

Watkins adds that the industry needs to set out a clear and consistent set of rules. Without a universal standard, a food manufacturer may be able to avoid disclosing its products' true carbon footprint by being selective about which stages of its supply chain are included in the carbon calculation.

As a result, similar products with different production methods may end up carrying similar carbon values. This could cause confusion for consumers, says Dodds.

Though he adds: "If a food manufacturer invests properly in the processes and procedures to reduce carbon emissions, then there's a real opportunity to gain a market advantage."





SGr, Shutterstock

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Like we've seen with nutrition labels, consumers don't always understand the meaning of what they're reading

Even with a universal set of rules in place, any labelling scheme should be voluntary, like the majority of food certification and assurances schemes, including the Organic and Rainforest Alliance

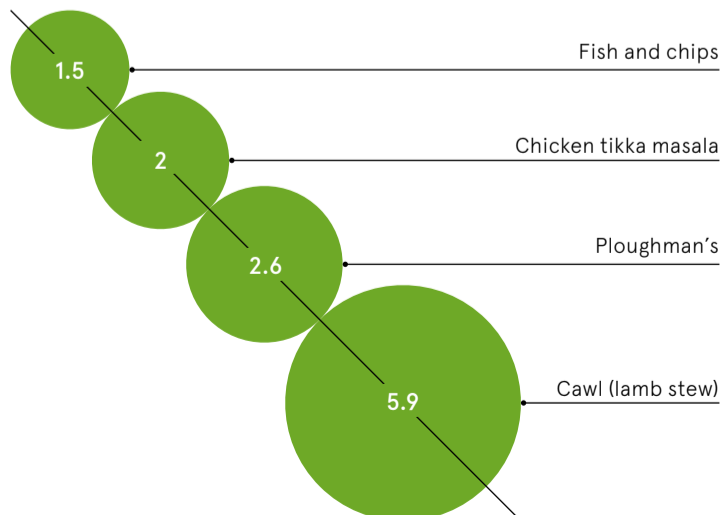
for example, already being used, says Watkins. Enforcing manufacturers to be part of a mandatory scheme could prove a significant financial burden, especially for smaller manufacturers that don't have the time, resources or technical capacity to measure their products' carbon footprint.

But the question of whether carbon footprint food labels would lead to people shopping and eating more sustainably is open for debate.

“Making greener purchasing decisions is a growing concern for consumers and increasingly a point of differentiation for brands,” says Dodds. “But it remains to be seen whether the impact of investment in carbon reduction will pay off at the checkout.” ●

**CARBON FOOTPRINT OF BRITAIN'S FAVOURITE DISHES**

Measured in kilograms of CO<sub>2</sub> equivalent



WWF 2018



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TOURISM

# Turning seaweed into big business

An influx of slimy sargassum seaweed has been blighting Mexico's Caribbean beaches, but new innovation has found smart ways to make it pay

Ben Edwards

**M**exico's Caribbean coast is famous for its pristine white sandy beaches and warm turquoise waters. Resorts such as Tulum in the south have become a magnet for the global jet set.

But over the last few years tourists in the summer months have seen an increasingly despairing sight as great

blooms of sargassum seaweed have been washing up on shore, fanning out in thick brown clumps on the surface of the water and leaving long, rotting heaps on the beach.

While the exact cause for the rise in sargassum is unknown, scientists suspect a combination of climate change and pollution from

agricultural run-off is to blame. Between April and October last year, one million tonnes of sargassum was deposited on Mexico's beaches.

"Even though it isn't here the whole year, it is affecting the tourist industry," says Alvaro Castro Martinez, owner of Tulum-based hotels Playa Esperanza and Tropicalito. "In the first year, people were still making reservations for the second year, but in the second year they stopped. People don't want to risk paying six months or a year in advance for a very expensive vacation if the principal objective is to see these beautiful beaches and ocean."

Removing the seaweed is a Sisyphean task during the sargassum season. "You spend half the day clearing the beach, only for the same amount to wash up again in the afternoon," says Castro Martinez.

With part of Mexico's roughly \$23-billion-a-year tourism revenues

on the line, last year the government's science and technology council, Consejo Nacional de Ciencia y Tecnología, started funding a research project with the Polytechnic University of Quintana Roo to try and turn the sargassum seaweed problem into a sustainable business opportunity.

"The first step was to talk to different groups of scientists and just see what kind of ideas were out there in terms of what potential economic uses sargassum might have," says Jorge Canto, project manager of the research programme. "Then we had to assess if it is technically possible, what the social and ecological impact would be – you don't want a solution that is even worse than the problem it is trying to solve – and finally whether or not there is a market for it."

Canto and his team of scientists have identified three uses with potential commercial value in the

pharmaceutical, agricultural, and oil and gas industries.

One of the properties in sargassum seaweed is sodium alginate which, when extracted, can be turned into a thickening agent used in pharmaceutical products and creams. The global sodium alginate market is worth around \$624 million a year and is expected to grow to almost \$1 billion by 2025, says Canto.

"If we could get 20 per cent of the global market share of sodium

“

**Sodium alginate, when extracted, can be turned into a thickening agent used in pharmaceuticals**





Source

# 1m

tonnes of sargassum seaweed deposited on Mexico's beaches between April and October 2019

Luna, co-founder of Mexico-based biotechnology company Tierra de Monte, who is heading up the fertiliser research.

Luna's team found that sargassum can create three agricultural products from one process. By heating and then filtering the seaweed, a concentrated liquid can be extracted to use as a biostimulant for crops. The waste from this can then be used as a substrate for growing mushrooms, with the debris turned into compost and spread on fields to enrich the soil.

The third potential commercial use is as a corrosion inhibitor for oil and gas pipelines. Compounds found in sargassum are similar to those used to prevent corrosion in water heaters and could stop steel pipelines from being damaged, says Canto.

"This has more value than the fertiliser, but the use is more specific, so it might not use as much sargassum. But it would have a bigger economic impact, which is particularly important for the harvesting of the seaweed," he says.

Collecting the sargassum is an expensive job. The Mexican navy has built special boats that can harvest the blooms directly from the sea, much like marine combine harvesters. But knowing where to find the sargassum in the open ocean is not easy. Another part of the project is attempting to solve this by developing a detection system that uses satellite imagery and artificial intelligence to predict how and where the sargassum seaweed is travelling.

"That enables us to pinpoint where the big spots of sargassum are heading so we can give the co-ordinates to the navy so they know where to go to harvest it," says Canto.

By creating a market value for sargassum, local fishermen could also be incentivised to help collect the seaweed and take it to a local processing plant, generating another sustainable business opportunity, says Lorenzo Martinez, who is managing the commercialisation aspect of the research.

There is, however, one small hitch to developing a market around a natural resource that is not always available. "All the business models need to take into account that sargassum only arrives for six months of the year, so for half the year you have a shortage of your primary material," says Canto.

And what happens if the recent increase in sargassum seaweed turns out to be a temporary phenomenon?

Martinez is sanguine. "Even if it is a season with a low level of sargassum, the amount of sargassum is enough to create an industry," he says. ●

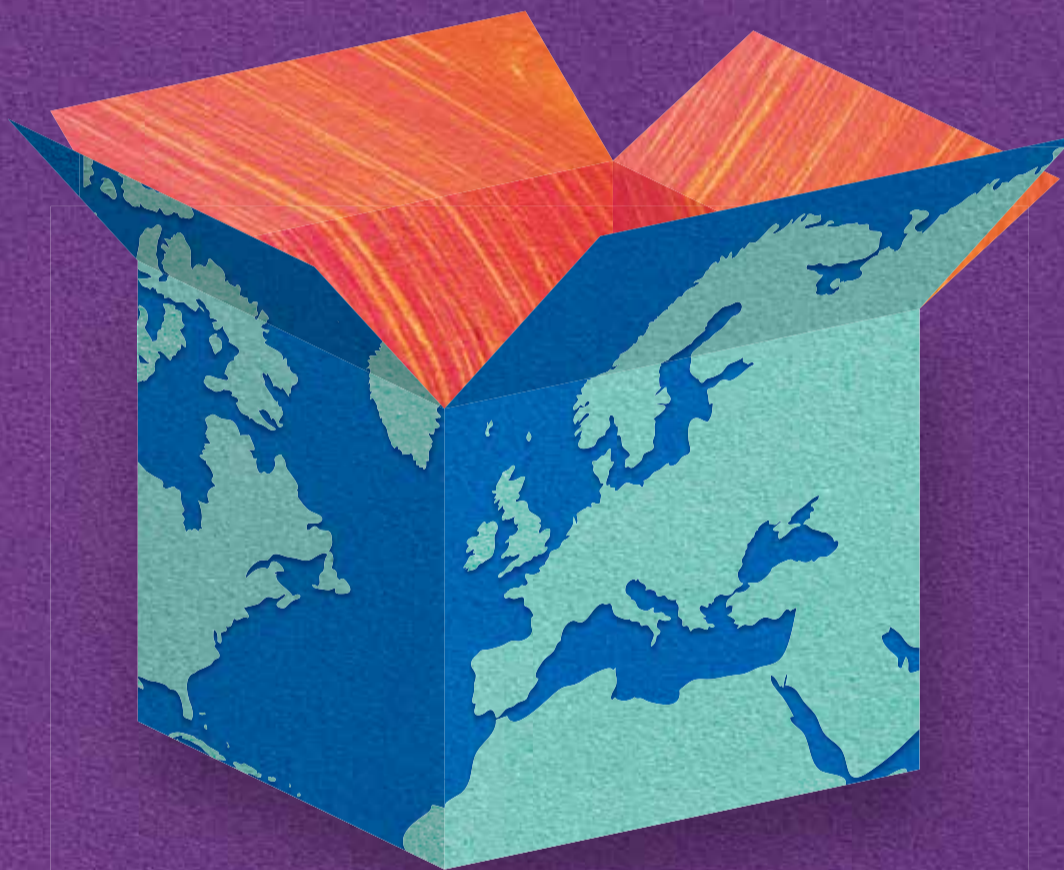
alginate, that would use 35 per cent of the entire amount of sargassum that arrived on the coasts of Mexico in 2019, so that's a third of the problem solved by just this one product," he says.

Another potential sustainable business use is as a biofertiliser in the agricultural industry. Mexico's farming industry is mainly concentrated in northern and central Mexico, in part because it relies on fertiliser imported from the United States, which is expensive to transport to the far south, says Canto. Producing fertiliser locally could help boost agricultural production in the Caribbean region.

"We proposed to do something with the sargassum that would be neutral to the environmental problem, provide sources of income to the people who live in the region, and to provide good and cheap agricultural inputs," says Adriana



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OF EUROPE'S LEADING FINANCIAL CENTRES.**

Our unique cross-border expertise allows you to serve your clients in global markets, our modern and international legal framework gives you the tools you need, our stability offers you a solid basis to grow your business, our openness to innovation helps you look beyond today and our commitment to sustainable finance connects you with the financial world of tomorrow.



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