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Editor's View

By Phil Alsop

Sustainability drives IT innovation

I'VE WRITTEN my Digitalisation World 1 comment about sustainability, so I won't keep you long with this IT Sustainability Supplement introduction.

Suffice it to say that, when I put out a request for contributions focusing on IT sustainability, 40+ articles later I was left in no doubt that a) sustainability matters to the IT community (and, therefore, by extension, their customers) and that b) there are many, many ways in which IT solutions can be both sustainable in themselves and also help those that use them reduce their carbon footprint as well as contribute to many other aspects of the green revolution.

The supplement contains a selection of the sustainability articles I received. The rest, the majority, can be viewed via the Digitalisation Website – in the Expert Opinions section.

For 2022 and beyond, we're very much planning to take what might be called a holistic approach to multimedia publishing. So, the digital magazines and the website content – news, articles and video interviews – should marry together to provide an impressive, hybrid knowledge resource. And what better topic than with which to start our hybrid publishing approach than today's key topic: sustainability?!

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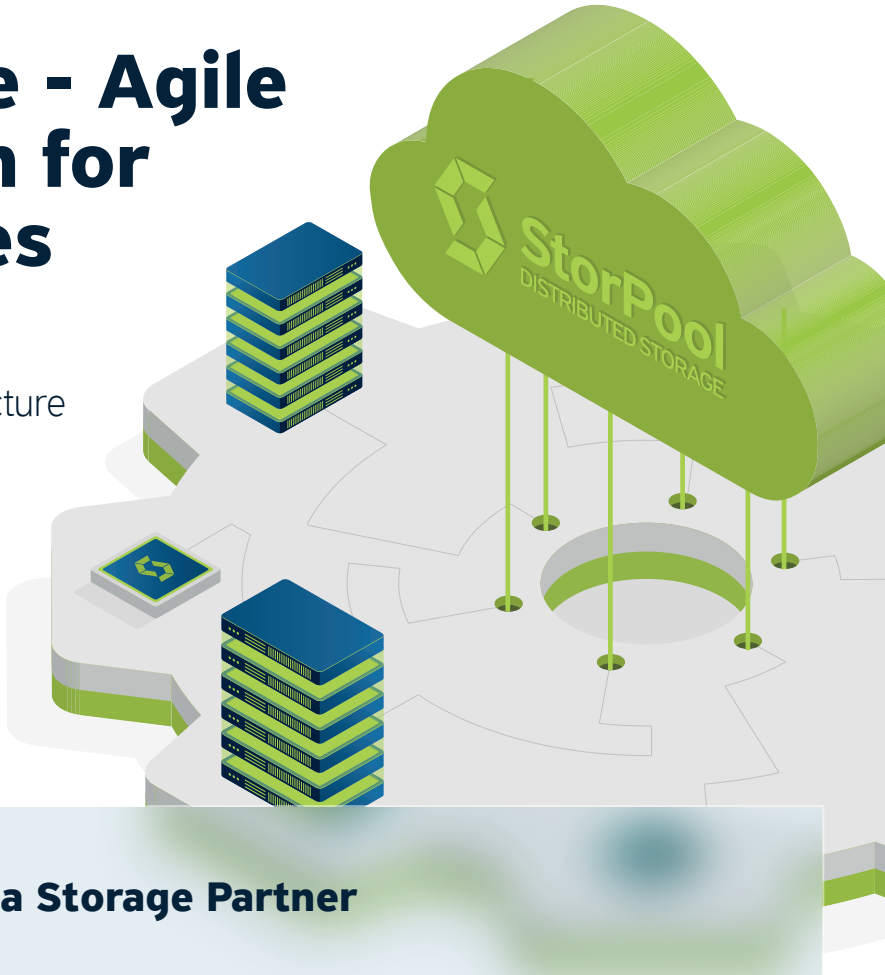

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Sustainability as a primary driver of innovation

Innovation can and must play a critical role in helping to simplify the problems and break the trade-offs between economics and sustainability.

BY VED SEN, BUSINESS INNOVATION AT TATA CONSULTANCY SERVICES

AFTER COP 26, the consensus is that global efforts to tackle climate change are still falling short of where we want them to be, due to conflicting interests. It's easy to ask a country to stop cutting down its trees or reducing palm oil production, but more difficult when their economy depends on timber or palm oil exports.

Through the IPCC, the 2015 Paris Agreement, and many other global initiatives (such as NetZero), we are attempting to claw ourselves back from the precipice of irreversible climate change but it will never be enough to simply address it through policy and behavioural change. Innovation has a huge part to play in helping us think about sustainability, in science, technology, design, and creativity.

One of the core premises of innovation is that it breaks the existing trade-offs between inputs and outputs - or between a zero-sum model and a win-win environment. It's becoming clear that the only way we will collectively achieve our global climate change goals will be with a significant layer of technological innovation across 12 important areas:

Energy

Renewables contributed over 40% of the UK's total energy production in the first quarter of 2021 but innovation's job is far from complete. There are plenty of firms who have dedicated themselves to the broad problem of sustainable energy production, including companies like Drax and Velocys, who are producing sustainable energy from waste wood and feedstock.

Enel is another global player, generating almost 50 giga watts of energy globally from solar, wind, hydro-electric, biomass, and geothermal means.

The science of solar cells is evolving as we speak. Perovskite materials (which are based on a specific crystalline structure) are being improved continuously for more effective harnessing of solar energy, and companies like Oxford PV are taking this technology to market. Others such as Icewind are building vertical axis wind turbines which can be used in industrial environments, extreme and remote locations, while Solecco are creating innovative roof tiles which are themselves solar panels.

A big part of energy consumption can be addressed by better storage, which is why battery tech has been such a headline item, not least because of Elon Musk. For example, Calderra's 'Warmstone' uses recycled and natural materials and is 100% recyclable, Theion looks to replace cobolt with the far more abundant sulphur for solid state batteries, Moixa wants to improve the «IQ of the world›s batteries» and Buffalogrid delivers content while helping charge small devices with solar power.

Transport

Every aspect of transport, across land, sea, and air is subject to innovation. For example, hydrogen cells and smart electric vehicles for people and cargo from Gaussin, and zero emission autonomous ships from Kongsberg. BP is even working on Sustainable Aviation Fuel (SAF), as electric planes become a reality.

Materials

The best place to solve most problems is to go as close as possible to the source, so the raw materials we use (especially the ones that have a big environmental footprint), are an excellent place for innovation. Enter fabrics from coffee grounds and biodegradable ‹vegan› bottles to combat plastic, sourcing fuel from household waste, or 'renewable' plastics from Neste.

I especially like the sound of AirCarbon which uses a naturally occurring biomaterial called Poly (3-hydroxybutyrate) or PHB which is a substitute for plastic, leather, and fibre. Meanwhile HP and Ford are using the waste from printing teeth aligners from SmileDirectClub (40,000 of them per day), as plastic that goes into trucks and cars.

Agriculture

One of the biggest sources for raw materials is of course farming - from silk to salad - and sustainable farming will go a long way to helping save the planet. Avalo applies AI to genomics to create plants capable of sustaining more extreme weather. Code Demetra, an Italian start up, works on the ripening process of fruit so it stays fresh longer through the distribution chain, reducing wastage, as well as refrigeration requirements.

Golden Agri has created high yielding Palm Oil seeds which will curb the deforestation caused by palm oil production. Avalo helps crops adapt faster to extreme weather so food can be grown closer to where it's consumed. For all the farm animals that need protein input, Ynsect generates food for plants and animals through its insect farms, while B-Droid's flying robots replicate the work of bees to accelerate pollination.

Production

Beyond the actual products, it's clear that we need to fix processes to be energy and carbon efficient. Generate capital sets up sustainable initiatives across the world across the world. Econic works on catalysts that convert CO2 emissions into polymers. Kobold Metals uses intelligent exploration to find rare minerals required for batteries and other sustainable uses.

Products

We have recognised the need for looking after products long after they've left the factory or the store as the entire lifecycle of products is our responsibility. We know that electronics have a lot of plastic and metal components which need looking after as lifecycles get shorter and we need better recovery as well as product design.

You might recall that the gold, silver and bronze medals for the Tokyo Olympics were made from metals recycled from over 6m electronic devices collected in Japan. Newer products such as solar panels can be designed for easier extraction, but less so for items such as mattresses. The circular economy needs to start rewarding sustainable design and fortunately, companies such as Greenology are now tackling the problem for legacy products such as tyres.

Waste

For every product, there is a by-product. One of the biggest focus areas of the sustainability program is the reduction of Greenhouse Gases (GHGs) and a lot of the innovations discussed earlier will support this objective. Recovering lost ground is a challenge

by itself, so even small efforts can be meaningful, such as the Sea Bin Project, and the Smog Free Tower. Full Cycle Bio Plastics made news a couple of years ago for creating organic plastic that bio-degrades, sometimes into fish food.

Measurement

We know if we want to improve it, we usually have to measure it. This can sometimes be difficult when it comes to effluents, greenhouse gases, or pollution on ocean floors. Planetly makes tools which help measure carbon footprint more effectively and PawPrint calculates your domestic carbon footprint but is also being used by companies to calculate their energy footprint under WFH conditions. Saildrone allows sensors to be mounted on autonomous oceanic vehicles for marine data collection. Responsibly allows benchmarking of supply chains for climate impact and diversity.

Consumption

As consumers we stand at the end of the 'supply chain' and the choices we make for travel, products and services are ultimately signals for the supply chain to respond to. The pandemic has seen the hollowing out of city centres and the rebirth of suburban living but wherever we live, green and sustainable buildings should be a must for most of us. Fashion brands especially will come under increasing scrutiny and even gaming has adopted the theme of climate survival.

Disasters

It's apparent now that an inflexion point has been crossed and we may see more natural disasters, from floods and fires to earthquakes. Our ability to predict disasters has been quite low because they have always been treated as freak occurrences but now companies like Kettle.ai are crunching the data to improve our ability to predict wildfires. Innovative companies like Eonef are using helium balloons to deliver data connectivity in disaster hit areas, or even to aid in wildlife observation.

Infrastructure

Our communication networks are the highways of the digital world. Small wonder that Nokia and Ericsson are both deeply involved in making 5G more sustainable both in its design and usage. Arup designs sustainable buildings for commercial use and airports are learning to become more sustainable too. The Galapagos airport is designed to run on solar and wind power, and 80% of the material used for the airport was recycled. Arlanda Airport in Stockholm has been carbon neutral since 2009.

Investment

None of this is achievable without the right investment, so a focus of sustainability in capital needs to be our last task for innovation. A lot is being done already, for instance, the climate risk reporting requirement of the TCFD in the UK, and any number of sustainability focused investment funds, and sustainable banks, such as Aspiration. However, the risk of greenwashing is always around the corner, and we need to stay vigilant.

Building a sustainable future

There's no doubt that the fight to save the planet can only be won if governments, businesses, institutions, and consumers all push in the same direction for the right changes. Innovation can and must play a critical role in helping to simplify the problems and break the trade-offs between economics and sustainability. In fact, sustainability might be one of the primary drivers of innovation over the next decade. What's your big idea to save the planet?

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How the tech industry can play its part in reducing carbon emissions

Corporate social responsibility is now a business imperative and should be leading the business agenda. Technology companies need to demonstrate that they are taking sustainability and a reduction of their impact on the environment seriously. It's a huge subject and more and more we are seeing customers demanding to know what we are doing.

BY SCOTT DODDS, CEO, ULTIMA BUSINESS SOLUTIONS

AS AN INDUSTRY, we can't keep taking raw materials out of the earth as they are running out and digital leaching is also ruining our environment. We need to get better fast. Throughout the pandemic, the impact a company has on wider society has been brought into sharp focus. Companies are rightly being judged on their environmental, social and corporate governance (ESG) activity, including charitable endeavours and how they give back to the local community. In the future companies won't be on a supplier list unless they can demonstrate their commitment to the environment. So how can a tech company improve its ESG practices?

How to improve your ESG practices

From looking at how to reduce your carbon footprint to using sustainability calculators to work out the impact of cloud services; energy efficiencies, renewable energy, circular economies and asset disposal and refurbishment of technology are all important areas of focus.

Why not try the following:

- Appoint a 'ESG head' to drive your green agenda. This will give your company the drive and focus to hold it to account and ensure that you arrive at a specified target or deliver on a set of objectives.
- Involve employees in setting company goals and plans to achieve covering topics such as employee experience and environmental, social, & governance. Engaging employees at this stage will help them to feel valued and encouraged. After all, lessoning an employees' impact on the environment is just as important as lessoning tech's impact.
- Inspire employees to make a difference by giving them volunteering days each year and as a c company, participate in fundraising and awareness campaigns, such as sponsored walks/runs, sleep outs, take part in food collections for the local food bank and operate a Cycle to Work scheme.
- Deliver an employee wellbeing programme that could include initiatives such as flexible working, wellness days, generous annual leave, sports clubs, development and training schemes, benefits platforms.
- Lead by example as a company and opt to go paperless, use eco-friendly cleaning products and provide employees with reusable items including water bottles and lunchboxes. Ensure that your office maximises natural light and use energy efficient lighting. Provision office-supplied equipment to automatically 'power off' after a certain amount of idle time.

What is Ultima doing?

At Ultima, we're doing all of the above, as we believe it's important to do everything we can to support the environment, local community and give back to others. Our goal was to reduce energy consumption by 5% by the end of 2020, by 15% by 2025 and to be carbon neutral by 2030. In order to reach this target, we have identified key areas around transport policy, lighting and heating through our ESOS reports which will allow this to be achieved. We are also partnering with Ecologi to plant 15,000 trees by 2030. We're planting a tree for each new starter, each webinar or event registration and every virtual meeting.

We've committed to putting sustainable technologies at the heart of our work. Our IA-Cloud solution has been purpose built on the Microsoft Azure cloud platform. A 2019 study found that Azure is up to 93 per cent more energy-efficient and up to 98 per cent more carbon efficient than on-premises solutions. It's estimated that a greater reliance on cloud computing can reduce per-user carbon footprint by 30% for large companies and 90% for small businesses and so we have embedded cloud into everything we do.

As a Microsoft Gold Partner, we share their global vision to empower every person and every organisation on the planet to achieve more and have signed their partner pledge. We have also signed HP Inc's Amplify Impact Pledge to drive meaningful change, assess our sustainability efforts and identify areas for improvement.

We are a responsible supplier of IT goods and services and choose our supply chain in a responsible manner. We work with our partner N2S to ensure all our old IT is recycled or destroyed in the most environmental way possible.

This year we have invested in training and to becoming a carbon neutral company, ensuring we are playing our part in taking care of our employees, the communities we operate in, and the wider environment.

We're passionate about doing our part to support the local community and actively support three local charities:

As a Microsoft Gold Partner, we share their global vision to empower every person and every organisation on the planet to achieve more and have signed their partner pledge

- **Mind -** we are campaigning to raise awareness and promote the understanding of the importance of good mental health through a series of fundraising activities and events.
- **Starting Point –** we are encouraging staff to act as mentors to this local charity who provide support and mentoring for disadvantaged young people aged 16-25, who are not in education, employment or training, to give them a brighter future.
- **ReadiFood –** we hold monthly food collections in the office for ReadiFood, a local foodbank. Throughout the pandemic we have continued to donate to the charity with staff donating food on a monthly basis when they visit the office.

We're at the edge of the precipice for the next generation. Sustainability and humanity's response to climate change is one of the greatest challenges of our lifetime. The time is now to ensure technology helps reduce man's impact on climate and still allows business and personal interests to flourish. Everyone has a part to play and the technology industry has an enormous responsibility as we can help with the reduction of carbon emissions from allowing effective communication globally.

It's easy for us as an industry to pay lip service to ESG issues, but it's critical we all set specific, measurable targets to reduce our impact on the environment and improve diversity. And we need to hold each other accountable to those targets. It's not too late to plan for a cleaner, greener future.

Ring the changes with circular IT procurement

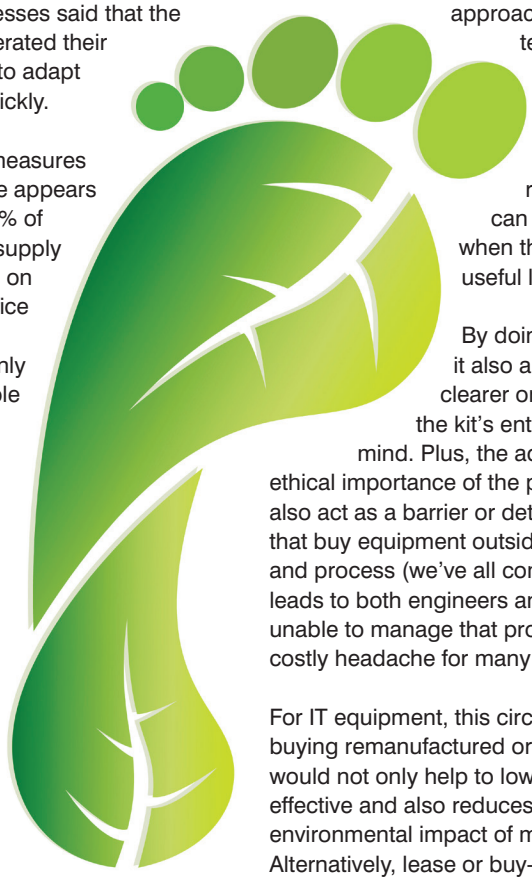
It is fair to say that sustainability and environmental responsibility is higher on the agenda for many businesses now than it has been over previous years. Not only is legislation slowly pushing businesses in this direction but the media spotlight, its increased importance to staff, as well as the high priority placed by consumers, means that many businesses are making improvements to their environmental footprint.

BY MARK SUTHERLAND, DIRECTOR OF E-COMMERCE AT STONE GROUP

STONE GROUP conducted a survey that showed environmental responsibility being a high priority for 32% of businesses and ethical beliefs as well as cost benefits were the driving factors behind this. Interestingly, 42% of businesses said that the COVID-19 pandemic had accelerated their plans in this area, forcing them to adapt their working practices more quickly.

However, when we look at the measures that businesses are taking, there appears to be an obvious gap. Whilst 45% of respondents identified a green supply chain as a priority, 39% focused on the green credentials of their office or building, 37% were tackling their logistics operations, and only 36% identified a more sustainable approach to IT estate management as a focus area.

According to recent figures, if no action is taken, the UK is set to become the biggest e-waste producer in Europe per capita by 2024. In 2019 alone, the country produced a total of 1.6million tonnes of e-waste which is the equivalent of around 23.9kg of waste per person so the opportunity to make a difference in this area is clear.



A 'circular' or '360-degree' procurement strategy puts sustainability at the heart of every stage of the IT equipment's lifecycle. In contrast to the linear 'take, make, dispose' economy, a more holistic circular approach encourages procurement teams to consider a 'make, use, recycle' route, looking at how a business can maximise the lifespan of a product through repair or re-use as well as how they can re-use or recycle products when they reach the end of their useful lifespan.

By doing this thinking up front, it also allows the business to be clearer on specification as they have the kit's entire lifecycle and cost in mind. Plus, the added environmental and ethical importance of the procurement process can also act as a barrier or deterrent to 'rogue spenders' that buy equipment outside of the agreed specification and process (we've all come across them!), which leads to both engineers and support teams being unable to manage that product and is a huge and costly headache for many businesses.

For IT equipment, this circular process can include buying remanufactured or refurbished products that would not only help to lower e-waste but is more cost-effective and also reduces the carbon footprint and environmental impact of manufacturing new products. Alternatively, lease or buy-back options could also be

Whilst our research showed that a quarter of businesses were unsure what happened to their e-waste or admitted sending it to landfill, two in five (41%) organisations were trying to give their kit a second life by donating it to charities or schools and 31% use an IT asset disposal (ITAD) facility

a more sustainable route, either leasing the equipment you need for a period of time or buying the technology but with a clause in the contract for the supplier to buy-back all or part of the equipment which they can then go on to remanufacture or reuse.

However, there is still some hesitation from procurement professionals and wider business around these sustainable routes, ranging from a fear of receiving inferior products or inadequate guarantees, through to believing they have a shorter shelf life or having their procurement options limited by their own company's policies to only allow kit to be purchased from certain manufacturers.

In truth, refurbished IT equipment is a great way of achieving the specifications a business needs at a lower cost. Reputable sellers offer refurbished equipment in a 'like-new' condition and offer warranties that rival those for new devices.

Similarly, considering the end of life for equipment that a business owns is equally important, particularly when you take into account that IT upgrades for the average business take place approximately every three to four years which leaves a vast number of defunct printers, servers, and tablets that are not all being sustainably processed or disposed of.

Whilst our research showed that a quarter of businesses were unsure what happened to their e-waste or admitted sending it to landfill, two in five (41%) organisations were trying to give their kit a second life by donating it to charities or schools and 31% use an IT asset disposal (ITAD) facility. In fact, those using an ITAD facility were not only reaping the benefits of their equipment being recycled or refurbished but cited the ease of the items being collected from their organisation and the fact that they could trust that data was securely wiped from their devices as significant factors behind their choice.

To be sure that you can benefit from the same peace of mind, it is vital to check a company's ITAD accreditations to ensure their service complies with the necessary environmental and health and safety laws and guidelines. It is also a good idea to ensure they can provide a full report and traceability as proof that your equipment has been disposed of responsibly, and make sure you choose a provider that guarantees zero waste to landfill. Finally, it should be easy to book collections via an app or website and, contrary to the many providers who charge a premium for collecting old kit, you should in fact look for a company that will offer rebates for your old equipment as many items will hold a residual value.

It is clear that more and more businesses are now committed to a more sustainable future and, with e-waste being one of the biggest environmental problems and IT estate management a seemingly untapped area of potential for many organisations, the opportunity is obvious – for the business itself as well as the wider world.

How to be a sustainable CIO

Sustainability is a topic that's everywhere: quite literally, as Google Trends suggests we've never been so fascinated by the topic. Kids at school learn about it, global leaders gather to make plans in the last-chance saloon of COP26 and, increasingly, corporate leaders are challenged by their boards and watchdogs to show their bona fides. But sustainability needs to be a high-level agenda item for CIOs too.

BY ANDREW BRINDED, SENIOR VICE PRESIDENT & WORLDWIDE SALES CHIEF OPERATING OFFICER, NUTANIX

SOME ORGANISATIONS are appointing chief sustainability officers or similar roles but CIOs are front and centre of the sustainability puzzle too. Datacentres account for over two per cent of the world's greenhouse gas emissions (about the same as aviation), according to various surveys, and the ICT sector is responsible for up to nine per cent of the world's electricity use, according to the EU.

Increased digitisation of the world will inevitably lead to more bits and bytes being sent and stored. The world's stock of digital information doubles every two years and with trends such as 5G and 4k/8k/16k video growing, there's no sign of a slowdown. Quite the opposite in fact: our addiction to hi-res entertainment and videoconferencing is leading to a data consumption glut.

The good news is that ICT developments are leading to more environmentally-friendly datacentres, servers, desktops, mobiles, storage and networking. Free-air cooling uses filtered ambient air to reduce datacentre heat, especially in cool climates with air that is neither too moist nor too dry. Waste heat is being repurposed, for example to power offices and renewable energy

sources such as hydro, solar and wind power are becoming widely used in datacentres too. All this has encouraged the EU to call for net-zero datacentres to be standard by 2030.

Equipment is becoming greener too. Hardware designs today are often based on cradle-to-cradle thinking and circular economy approaches where recycled materials are used and reused. The process of using microorganisms (called bioleaching) is also showing promise in the mining of precious metals used in hardware. Badge programmes such as Energy Star have made it far easier to select tools in good conscience. And of course, engineers are constantly working on hardware and software approaches to create smarter, more efficient processes and hardware that sips at power.

Also, we can be confident that ICT itself is a power for good. It enables automation that helps to reduce energy usage elsewhere in the value chain. Think for example of how Zoom calls are replacing international business travel or how virtual goods such as digital streams and downloads are replacing physical goods such as DVDs and books. Or consider how smart manufacturing is creating more efficient product design and fabrication or how smart cities are leading to tremendous efficiencies in transit, waste collection and digitised services. And of course, digital platforms and tools are the raw materials for the next waves of smarter options.

Much of the opportunity to clean and renew our world is centred on digital efforts. By making best use of ICT, CIOs can now not only make their organisations greener, thus building brand equity for them, but also more cost-efficient. Sustainability is a win-win all-round.

Of course, sustainability isn't simple and building net-zero datacentres such as those being created at Apple and Facebook is going to be limited to a privileged few for now. But CIOs have some big levers at their disposal and, by using cloud and co-location, even smaller enterprises can access highly efficient resources. These offer ways to share costs, achieve high levels of utilisation via advanced virtualisation and containers, and to tap into the infrastructure and skills necessary for optimal energy efficiency.

There is a compelling confluence of trends here. Cloud adoption is accelerating just as datacentre design is rapidly evolving and as networks become smarter and utility-like. We have the chance to tap into a new computing grid that offers tremendous value and efficiency without sacrificing ethics. But the sustainability issue needs to be looked at from an even wider lens.

CIOs also need to examine the backgrounds of suppliers and their supply chains and sourcing of components, for example. If we examine matters in the round and examine our own consciences on matters

Of course, sustainability isn't simple and building net-zero datacentres such as those being created at Apple and Facebook is going to be limited to a privileged few for now. But CIOs have some big levers at their disposal and, by using cloud and co-location, even smaller enterprises can access highly efficient resources

such as business travel, choice of company cars and carbon offsetting policies then we help to perpetuate the continuum of improvements that are needed.

The challenges are many but the rewards are equally plentiful. Organisations that can show leading sustainability credentials will be best placed to hire and inspire the latest generations of talented people that demand employers that can provide more than a salary. CIOs can blaze a path that goes way beyond altruism to enlightened self-interest while preserving the planet and promoting ethics at the same time as they create lower cost bases and healthier practices for all. Stocked with deep knowledge of the ICT sector, CIOs need to push to lead or at least sit on the steering committees that will shape our collective future.

Achieving sustainability through technology

The good news is that many of the initiatives that can help a business reduce its carbon footprint are also effective for saving costs.

BY SIMON SHORT, CHIEF OPERATING OFFICER, ADVANCED

PROTECTING THE ENVIRONMENT and sustainability were not considerations when most legacy mainframe systems were built. Today, businesses not only have to consider their carbon footprint and environmental impact in order to meet the increasing demands of government-mandated compliance, but they are important value metrics that help attract new customers, investors and even bring new talent into an organisation. Businesses that aren't putting sustainability and ESG at the top of the agenda for 2022 are running the risk of putting themselves at a competitive disadvantage.

The good news is that many of the initiatives that can help a business reduce its carbon footprint are also effective for saving costs.
IT introduces automated processes that save businesses time and money, optimising workflows so that employees can spend their time on other activities that support the overall business objective. These include building relationships with new and existing clients, and coming up with more creative and innovative ways to solve operational problems. It allows organisations to use people for what they are best at, rather than leaving them bogged down in admin.

In sectors like field service management, using operative and journey management software can help optimise the time each individual is out on the road, helping them spend less time in the vehicle and more doing their jobs. This results in lower fuel costs and higher completion rates, which are better for the books and improve the business's customer reputation too. The environmental benefit of optimised journeys is lower emissions, which are better for the planet and better for local communities. It's a win-win for everyone.

Digital solutions exist for every aspect of business management and across every sector. They promote paper-less working, which reduces printing and paper costs for the business while also streamlining access and storage of multiple documents. Bulky and unwieldy files have been replaced by online documents that can be accessed in real time by colleagues working in different locations, letting everyone see the same 'truth' at any one time. There is no longer the risk that pages will be mislaid or that some people are mistakenly excluded from updates – it's all there in the Cloud wherever and whenever it is needed.

In order to understand the environmental impact of an organisation, it must first be measured. The data collected using emissions software tools provide insight for where changes can make the most difference, with areas such as overall greenhouse gas (GHG) emissions from building, travel and data centres, as well as policies for reusing and recycling being central elements. At Advanced we have undertaken our first ESG report, to share where we are now and the progress we are making in achieving our goals around sustainability.

Organisations need to look beyond their Scope 1 emissions, resulting from their own direct activities, and consider Scope 2 and 3 – indirect emissions from purchased energy and other indirect emissions. Migrating from a legacy mainframe to a Cloud-based technology solution can help reduce these harder to quantify indirect emissions. Legacy mainframes

use considerable amounts of power to run and the data centres they are based in have other negative environmental impacts relating to energy consumption, such as air conditioning, and waste.

By contrast Cloud architectures use a fraction of that energy demand for much greater workloads and many Cloud providers are seeking to source their energy from renewal sources, vastly reducing the overall carbon footprint of the provider and its customers. At Advanced, we believe sustainability is wider than just carbon footprint. Our ESG report also looks at diversity within the organisation, as it is important that our workforce is representative and reflects the broad diversity of our customers and the industries they operate within. From a business point of view, a more diverse workforce has been shown to be more creative, innovative and prepared to challenge the status quo, leading to higher productivity and efficiency. Digital solutions are helping organisations like Advanced to increase diversity and thus improve our overall productivity, and it helps us attract and retain the best talent too.

We use technology at the hiring stage, with competence and aptitude tests instead of CVs in order to reduce unconscious bias in recruitment and help us identify true potential, ability and suitability. During the pandemic we, and millions of other businesses worldwide, used technology to successfully recruit and onboard new starters, some of whom were not able to enter the office for months because of lockdown.

By having a strong sense of our own company culture, communicating this effectively with potential applicants and making sure that they shared our values via online tests, we now achieve a high retention rate, with less than 4% of hundreds of external hires leaving during the first six months last year. This saves us money and time in recruitment, plus it helps us build stability and consistency within our teams and is great for customer service too – people love to deal with the people they already know and trust.

The lessons learned during lockdown included the realisation that with the right IT in place, employees could work effectively and productively from home. This opened new talent pools for businesses prepared to develop and implement on-going remote working opportunities. Technology has enabled people who might previously have been excluded from the workplace for reasons such as geography, domestic commitments, disability or chronic illness, to be able to make a meaningful contribution to the world of

work, becoming valuable assets for their employers. Culturally, businesses must be committed to encouraging diversity and discovering 'hidden' talent, but having the right IT solutions is what actually makes this policy workable and successful. Advanced has partnered with Astriid, a charity that links employers with people with chronic illness and disabilities, to match the right experience and talent to roles and organisations.

Having secured the right talent, technology plays an important role in retaining and developing those individuals. Online employee engagement tools became more important during lockdown, and all businesses can continue to use these to make sure everyone in the organisation feels that they have a voice and that they matter. Annual reviews are a thing of the past with new flexible and agile performance management software that helps establish a continuous, dynamic, two-way communication and feedback process. This helps employees feel more engaged in their own performance management and more able to make positive changes that help drive greater efficiency and productivity.

We recognise that our people are our greatest asset and we invest in employee-focused policies, utilising all the power of the latest technology to deliver many of these. Technology is the car, but our success is down to the people who drive it. It is our responsibility to help protect the planet for the sake of all its people, playing our part in a fully sustainable future for everyone.

The lessons learned during lockdown included the realisation that with the right IT in place, employees could work effectively and productively from home. This opened new talent pools for businesses prepared to develop and implement on-going remote working opportunities

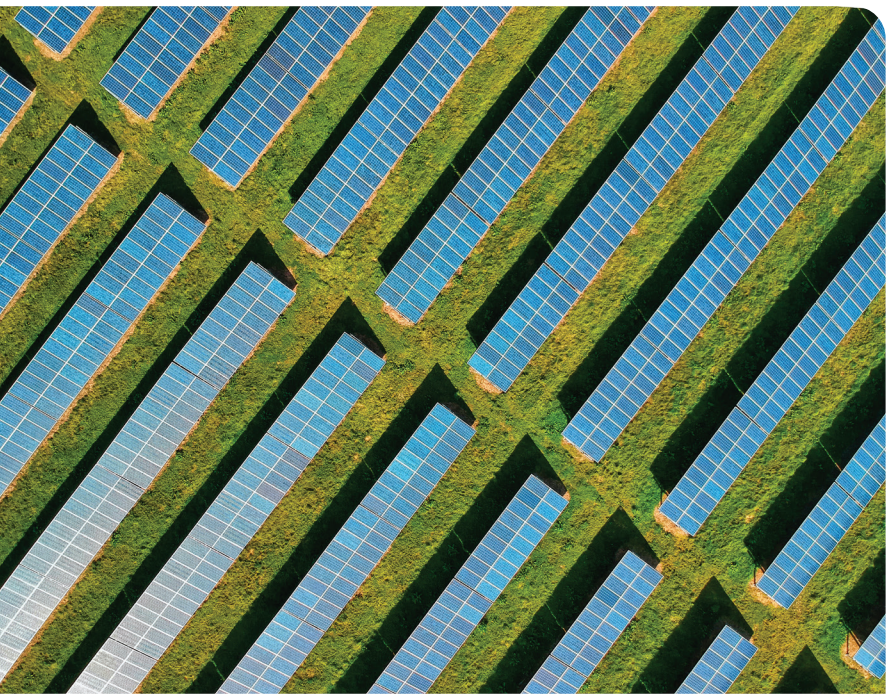
Three ways AI is revolutionising sustainability for businesses

The correct combination of will be key to solving one of the most pressing challenges for humanity and business to date.

BY DAVID POWNALL, VP SERVICES AT SCHNEIDER ELECTRIC UK&I

ACCORDING TO RECENT DATA from Irish and UK businesses, over 91% see decarbonisation as a priority this year. Turning priorities into results often requires levels of precision and accuracy which are out of reach of human ability alone. Making more informed decisions based on huge quantities of data, coupled with solid information so that businesses can maintain their sustainability targets and benefit from higher operational support can be achieved using artificial intelligence.

To be future-ready, companies must start combining AI, human skills, and trusted partnerships right now. After all, climate change won't wait for us to be ready.



Rising sea levels, and intensifying wildfires, storms, droughts, and floods hammer home that message every day. The damage is undeniable, and the clock is ticking.

Human and Artificial Intelligence combined helps solve the energy challenge

Clean energy and efficient energy management are key to attacking the climate crisis. And the true value of Artificial Intelligence in energy management springs to life when technology meets human expertise. When you equip energy market experts with data-based insights and digital technologies, you get better-informed corporate strategies, quicker decision making, and greater operational efficiency.

AI is still a relatively new kid on the block – and many people may still have the impression that it's a theoretical discipline that's not yet able to deliver practical solutions.

The reality, however, is that we already apply AI to analyse, simulate, test, use logic, learn, predict, and adjust over time. And those capabilities can help companies and societies advance toward greater energy efficiency and decarbonisation. Here's three ways AI can shape energy management:

1. Maximising energy efficiency

25.4% of UK and Ireland businesses claim to have installed a microgrid or renewable power source like solar or wind. Making sure this energy does not go to waste is key. This is especially because 80% of CO2 emissions are linked to the production and inefficient consumption of energy. Companies collect large amounts of data that they can use to maximise this efficiency. Turning that data into insights can be a challenge – but one that AI can help with.

AI can accurately track and anticipate consumption trends, notice where changes need to be made, and automatically fine-tune systems to ensure optimum efficiency. And it can help companies react instantly to demand response opportunities and to the increasingly frequent disruptions caused by extreme weather.

2. Expansion of energy sources

On the road to net zero, clean energy is undoubtedly part of the solution, especially when delivered hand in hand with eliminating energy waste. Clean energy and energy efficiency are things we already have today, alongside the existing technology that we require to harness them.

AI can also support companies in introducing renewable energy sources and controlling their carbon footprint – giving clean energy a better chance in the market.

Companies producing their own renewable energy can apply AI and predictive analytics to weather data to help determine peak times for generation and optimise the use of distributed-energy storage systems or batteries.

3. Informed energy spending

A smart approach to sustainability also includes smart spending. AI can examine complex market trends and dissect data to devise plans to better manage energy spend and reduce risk in a volatile market.

AI-powered forecast algorithms are vital, as they enable flexibility for the most critical demand. For example, if you have a peak at £1 and in one hour another peak at £1.50, it's better to have enough energy available for the second peak. This is possible thanks to these forecasting algorithms.

This technology can also observe how and when companies consume energy and support their trading decisions. For example, companies who both consume and produce energy – known as prosumers – can receive guidance to make optimal decisions on when to sell excess energy from their renewable sources.

Going further than net zero What does this look like in practice? Take the distribution centre of the retailer Lidl in Finland. Here, smart building operation software "teaches" the building management system to predict and optimise energy use. The system works in tandem with the site's microgrids, so that energy is produced, consumed, or stored exactly where it needs to be, saving 70% in energy costs. During certain times of year, it can even go beyond net-zero by distributing excess energy to 500 homes nearby.

Artificial intelligence has already allowed businesses to take advantage of many opportunities, but AI alone cannot magic a business towards its green energy and sustainability goals just with the flick of a switch. Successful application of AI technologies can help to facilitate a company's net zero future, whilst also keeping them on track with their sustainability targets. The correct combination of artificial and human intelligence will be key to solving one of the most pressing challenges for humanity and business to date.

How data analytics is enabling businesses to practice sustainability

To build sustainable operations and practices, businesses need data and analytics to find efficient ways of managing their processes and assets.

BY SUNIL SENAN, SENIOR VICE PRESIDENT AND BUSINESS HEAD, DATA AND ANALYTICS, INFOSYS

SUSTAINABILITY is being able to meet the needs of the present without sacrificing those of future generations.

Today, sustainability is no longer a good-to-have CSR initiative. Instead, it is central to all businesses as it creates value by driving efficiency, lowering the cost of operations, and encouraging innovation. Most importantly, sustainable companies can become profitable in the long run, as the discussion at the World Economic Forum in 2020 proved.

At the heart of the future of enterprises is data. It is driving new business models, new experiences, and a new data economy. For instance, a global auto major is leveraging data and vehicle connectivity to provide a multi-modal transport to create new experiences and

payment option that includes car-pooling, car-sharing, or car subscriptions.

With the advent of cloud, AI, and ML, enterprises are able to reimagine their industry play, often even crossing the traditional industry boundaries. Data is used to make enterprise digital that works with the clock speed governed by real-time, every-time operations. No matter the nature of your business, data analytics helps you transform to a live enterprise (synonymous to living organisms that can sense, respond, and evolve with context and experiences) as well as sustainable. For example, a US-based power utility company is using data and analytics to mitigate wildfire risks. Data Analytics is the cornerstone to everything: building an efficient supply chain, adopting green banking, or designing a sustainable office campus while ensuring data privacy, security, and compliance.

The emerging role of sustainability in businesses

To build sustainable operations and practices, businesses need data and analytics to find efficient ways of managing their processes and assets. Connected devices, sensor technologies, instrumentation, and the Internet of Things (IoT) network can lead to better data collection. A well-defined data management strategy built on AI and predictive analytics can draw insightful analysis out of this data to create advanced industrial systems that can support sustainable ecosystems.

For instance, typically, a supply chain contributes to 90 percent of most companies' environmental impact. According to a PwC study, AI can potentially help reduce global greenhouse gas emissions by up to four percent by 2030. Another study by Deloitte in March 2021 found one out of every three consumers claimed to have stopped purchasing certain brands or products because they had ethical or sustainability-related concerns about them. So, it is not only worth it but also prudent to build an environmental-friendly supply chain.

By leveraging data, businesses can bring new automation power to their supply chains. Data Analytics can help optimise supply chain flow by forecasting demand, facilitating planning activities, planning predictive maintenance, and reducing error rates significantly. AI systems built on strong data analytics can also help discover and predict consumer habits and anticipate demand trends thereby, minimising unwanted inventory and wastage.

Similarly, using the expertise of technology companies, banks can create an index that considers multiple parameters as charted by UN sustainability strategies. Banks can use this index to make smarter and faster decisions on incentivising corporate customers who meet climate protection guidelines in earnest. These incentives, such as lower interest rates on loans—can push organisations to score better on the Green Banking Index by focussing on sustainability goals.

As James Gorman, the CEO of Morgan Stanley, perfectly explained the importance of sustainable finance: "If we don't have a planet, we're not going to have a very good financial system."

Several companies already collect and report sustainability-related data across their operations. Such companies are now turning to analytics to define their sustainability agenda by collecting data from a wide range of points.

For instance, collecting real-time data using sensors and IoT devices in an office building or campus can help derive relevant insights on energy and water usage patterns, seasonal factors and occupancy levels. These can help in making automated decisions on how to optimise energy and water consumption or reduce waste.

These insights can also help make business systems work better so that employees are healthier and more productive. As a result, you have an organisation that's not only lean and agile but also attracts and retains quality employees.

To build a sustainable campus, organisations must start by articulating the success metrics and prioritising smart infrastructure and operations, smart user experience, and smart environmental design. Importantly, they must collaborate with expert partners who have been through the journey themselves.

Between 2007 and 2018, Infosys used Smart Spaces methods to achieve the following results at our Mysuru campus: we reduced per capita electricity consumption by 34 percent, water consumption by almost 60 percent, and increased the share of renewables in our campus energy mix from 30 to 80 percent.

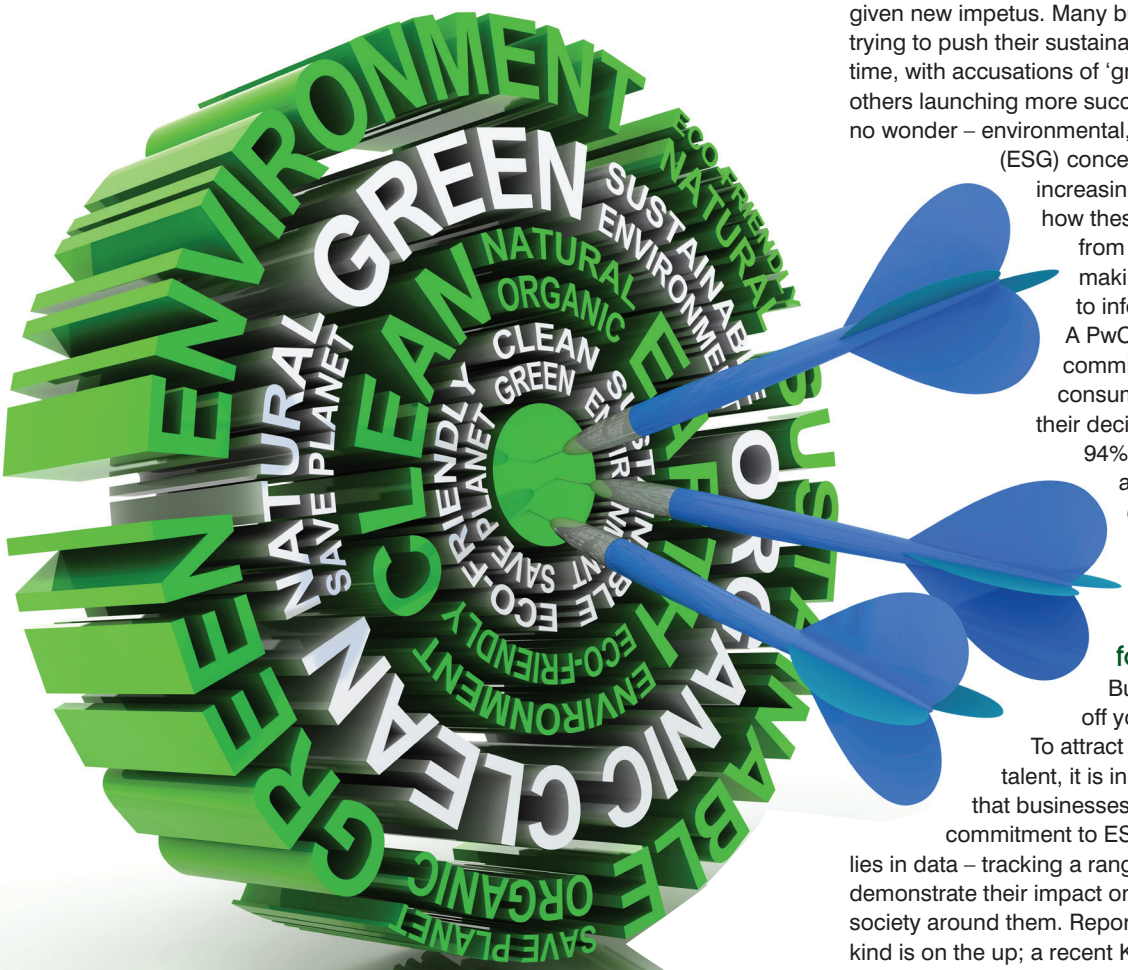
By doing so, we were able to promote sustainable usage of scarce resources such as energy and water and impress our current and potential customers while simultaneously exceeding all applicable regulations.

Collecting real-time data using sensors and IoT devices in an office building or campus can help derive relevant insights on energy and water usage patterns, seasonal factors and occupancy levels

Want a more sustainable business? Understand your data

The dust hasn't yet settled on the announcements made and agreements forged at COP26, but attention is already turning to how both governments and private sector organizations will meet the lofty sustainability targets they are expected to.

BY JULIE KAE, VP OF SUSTAINABILITY & DE&I, EXECUTIVE DIRECTOR OF QLIK.ORG



OF COURSE, this focus is not new but has been given new impetus. Many businesses have been trying to push their sustainability credentials for some time, with accusations of 'greenwashing' mixed with others launching more successful initiatives. And it's no wonder – environmental, social and governance (ESG) concerns are playing an increasing role in all aspects of how these firms are evaluated – from pitching to investors and making procurement decisions, to informing consumer choices. A PwC study found that ESG commitments are driving both consumers and employees in their decision-making; 80% and 94% said respectively that they are more likely to buy from or work for a company that stands up for the environment.

Setting standards for sustainability

But how easy is it to show off your green credentials? To attract both customers and talent, it is increasingly imperative that businesses are able to prove their commitment to ESG. The answer for many lies in data – tracking a range of different metrics to demonstrate their impact on the environment and society around them. Reporting information of this kind is on the up; a recent KPMG study noted that 80% of the world's largest organizations now provide some form of sustainability reporting, up from 13% in 1993.

For all the corporate reporting in the world, a lack of standardized metrics between businesses means that the data collected risks falling on deaf ears. If that intelligence is specific to an organization, how much of it can make sense to the customers, employees, investors and regulators that it is aimed at? Without such standards – and the ability to understand said data – ESG metrics risk being branded as the next wave of corporate jargon. In fact, a Deloitte survey revealed that a lack of transparent information about ethical practices and values is stopping 34% of consumers from engaging with brands.

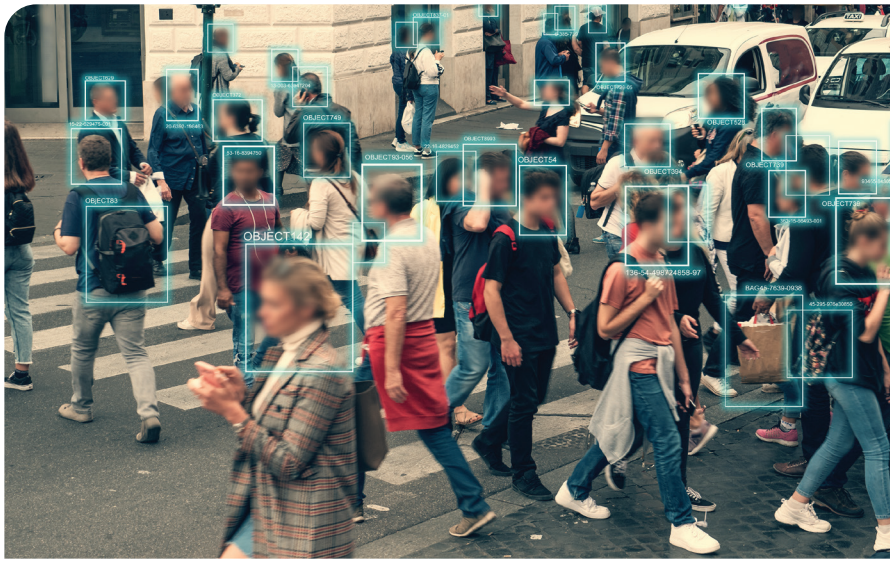
This isn't just an external issue, either. Despite increased ESG reporting, PwC also reported that 37% of business leaders highlighted a lack of standards (along with regulatory complexity) as a major barrier to ESG growth. For all the generated data available to share with key stakeholders, often even the businesses reporting it don't know what it means or how they should be presenting it.

Data Literacy for people and planet

The latest research from Qlik showed that, despite the significant increase in the use of data in every aspect of business, just 24% of the global workforce claimed to be fully confident in their ability to read, work with, analyze and argue with data.

As the intensifying debates over the environment and social justice show, however, the need to tell a story with data has an impact beyond attracting customers, hiring staff or targeting investors. Having the ability to understand ESG data can drive decision-making with major ramifications for people and planet. At the highest level, it is contributing to decisions that inform major goals and targets, such as the United Nations Framework Convention on Climate Change (UNFCCC). This is where global ESG data reporting standards come in – if corporate emissions targets might have been slightly nebulous, we now have the opportunity to align businesses with the global bodies driving change. And it all starts with a full understanding of the information we have available. For example, while debate rages on the success or otherwise of COP26, one of the main focuses has been keeping the world on track to limit the rise in average temperature to 1.5 degrees.

There are urgent scientific reasons why this target has been set, yet even for the largest of organizations, understanding how their activities directly relate to



this target can be difficult. With a better understanding of data and the ability to see the narrative in the intelligence, companies are in a much stronger position to align their activities with global goals and crucially, make decisions that have a tangible impact.

Democratizing the responsibility for climate change

Part of the challenge is that not everyone can be a climate expert. To accurately convey ESG data, each business needs to be able to present it in a user-friendly manner. By doing so, all stakeholders can work with data to align and activate proactive efforts to operate more sustainably. For example, developing accurate scenarios and simulations transparently means that everyone in the organization can understand key actions that need to be taken. That's the key – making data consumable by everyday users. It can be detailed, or even the result of complex calculations drawing on multiple different sources. But empowering employees to self-serve and use the resulting intelligence to support their roles, rather than stopping what they are doing to decipher huge volumes of information, can have a significant impact – particularly in an area which has been subject to little tracking and reporting.

Climate change is a matter of real urgency, and all organizations need to do their part. Being able to understand and convey associated data points accurately will not only support each organization in its efforts, but provide the basis for global collaboration and informed action.

As the intensifying debates over the environment and social justice show, however, the need to tell a story with data has an impact beyond attracting customers, hiring staff or targeting investors. Having the ability to understand ESG data can drive decision-making with major ramifications for people and planet

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