



Can technology make your business more sustainable?



Glossary of technologies

Data analysis and machine learning

An increasing number of applications is available in this area. They can crunch data to give emissions or other sustainability figures, identify looming problems with equipment (which saves waste), compare facilities and optimise performance.

Blockchain

This can help to validate the sustainability credentials of consumer products

Neural networks

A type of machine learning, this can teach a computer how to identify different substances for recycling.

Internet of things

This is the name given to sensors that have multiple uses from monitoring energy usage to tracking goods. Brambles, the shipping pallet operator, uses the IoT to optimise capacity and identify when a problem in the supply chain might cause products to spoil.

Digital twins

It can be cheaper to model anything, from packaging to buildings, by using a computer rather than making a physical prototype. A digital twin leads to efficient use of materials or emissions reduction.

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Can technology make your business more sustainable?

Emerging companies have made a difference in helping larger groups to measure, assess and devise plans to minimise their impact, writes *Lucy Colback*

Sustainable practices are now an imperative for everyone in business. Scientists have found that seven of the eight “earth system boundaries”, which include climate, biodiversity and natural ecosystems, are beyond their “safe and just” limits. Climate events are worsening with 2022 registering the hottest summer in Europe coupled with significant water shortages. Concern is growing over further drought this summer. In the US the Environmental Protection Agency says average temperatures in America have risen at a faster rate for the past three decades and that similar trends are observed worldwide. The need for faster action is obvious. By 2050, CO₂ and other greenhouse gas emissions, if unchecked, will result in more than rising temperatures, widespread flooding and stranded assets.

Julian Allwood, professor of engineering and the environment at Cambridge university, says: “Climate change is real. It is still being discussed as if it was a middle-class dinner party conversation but... on the trajectory we are on, maybe up to a billion people in poor countries near the equator will be unable to access sufficient food this century. It’s a much

more urgent problem than anybody has appreciated yet.” Economically, Swiss Re estimates that global gross domestic product could shrink by at least a tenth unless there is a concerted effort to keep the global warming threshold to well below 2C.

Companies must either take control of their actions or risk a public backlash when reality bites. System-wide change is needed to drive sustainable consumer and corporate behaviour – individual actions must include more cycling and walking; driving smaller, electric cars; minimising flying; being judicious with purchases; switching to heat pumps and avoiding red meat.

Although climate change dominates the headlines, sustainability is the wider topic that considers how humans affect the planet and its resources. It covers environmental issues arising from pollution, the use of natural resources (water, land, forests) as well as waste treatment. While the UN’s sustainable development goals extend to societal factors – such as equality and health, whose absence often lies behind poor stewardship of resources – this report will focus on the environmental effects of business activity.

Show me the money

The avoidance of loss, either financial or of biodiversity, should be an incentive for more responsible corporate behaviour. It has been hard, however, to convince boards and investors of the need for action given the perceived lack of benefit. Even if companies do not wish to take action, consumers today demand more from who they buy from, and they prefer to deal with those that reflect their values.

Tangible rewards await those that act responsibly. Better management of resources can reduce costs and improve profitability through, for instance, more efficient use of energy or reduced business travel.

The top line can benefit, too, as the World Economic Forum highlighted in its white paper *Winning in Green Markets*. Its 2023 study, in collaboration with Boston Consulting Group, said demand for green materials would probably outstrip supply. This will benefit those that take an early lead even if there is an initial extra cost, with consumers more willing to pay a green premium. The report observed a median price premium of 35 per cent for sustainably marketed products in consumer goods in the US in 2021. Over five years the compound annual growth rate of revenues was two and a half times that of conventionally marketed goods.

More critically, as consumer concern grows, reputation will make or break a company. A 2021 awareness study commissioned by Japanese advertising agency Dentsu Group and Microsoft Advertising found that within a year three in five respondents would shun brands that do not act on climate change while half would switch to greener alternatives. Companies such as Valve, creator of the Steam Deck gaming console, which taps into the desire for greater product repairability win plaudits from fans. Meanwhile, it remains to be seen what the impact will be of Apple’s strategy to enable its devices to be more easily repaired – but seemingly only by expensive Apple-accredited technicians.

The emphasis on values over brand will increase in importance as younger generations mature. A US consumer survey by First Insight and the Baker Retailing Center at the Wharton School of the University of Pennsylvania in late 2021 said Generation Z, born between 1995 and 2010, cares more about sustainability than brand names than any other generation. Three-quarters of this group rank sustainability highly and only half consider brands when they buy products. The survey concluded that Gen Z’s stance has influenced those older than them. Across all generations, three-quarters of respondents expect retailers and brands to behave more sustainably.

In Europe a similarly high proportion of people feel “a personal responsibility to act to limit climate change”, according to a Eurobarometer survey, while a majority believes that climate policies will create more jobs than they remove.

Regulation coming

Even if they choose to ignore the headlines and disregard the consumer, companies’ choices will run out as governments step in to legislate. In the area of climate change alone, the WEF counted more than 1,100 new laws worldwide since the Paris Agreement in 2015.

The “right to repair” is one example. Popular movements have forced some US states to legislate over this so that all products are easily repairable rather than having to be sent to landfill. Such laws are planned elsewhere in America while the European Commission has adopted a similar proposal.

Regulation has taken hold in other areas, too. In 2015 the UK levied a charge for single-use plastic shopping bags and in 2020 it banned plastic straws and microbeads. A further ban on single-use plastics, including plates and cutlery, will come into force this autumn. Laws to improve reuse and recycling rates, which will be critical to reducing plastic waste in the oceans, are under discussion in both the EU and the UK. In the US, California, a global top-five economy in GDP terms, last year mandated that all packaging must be recyclable or compostable by 2032.

Recognition of the problems caused by waste extends beyond that of the ecological disaster caused by discarded plastic. The European Commission estimates that the bloc’s citizens discard 6mn tonnes of textiles a year, only a quarter of which are recycled. EU member states now support a ban on the destruction of unsold clothing, so action may be imminent.

Investors onboard

Investors are weighing in, too. A Dutch-led coalition of 185 investors, which oversees \$10tn in assets, wrote in May to the world’s biggest grocery, retail and consumer goods companies to warn of the risks posed by continued use of plastics. Failure to act, the group says, will lead to financial risks including “regulatory risks arising from bans, taxation and extended producer responsibility costs, reputational risks, increased momentum in plastic-related litigation and increased raw material costs”. This follows investor action in 2022, when at least six companies including Amazon and McDonald’s faced shareholder petitions asking for greater disclosure of efforts to reduce plastic usage.

Meanwhile As You Sow, the non-profit shareholder advocacy group, began a petition in 2021 demanding that Microsoft investigates the benefits of making its products more repairable.

Corporate behaviour

Of course there is a risk when companies claim sustainability credentials. The potential for greenwashing is a big concern. In June the UK advertising watchdog took action against Shell, Petronas and Repsol for advertisements that misled the public about the climate and their products. In October last year HSBC advertisements were banned for being selective with information.

Even as some industry leaders work together to find solutions through organisations such as Pace (the Platform for Accelerating the Circular Economy) some in the UK have resisted government efforts to make them more accountable for plastic recycling. The implementation of a bottle recycling scheme in England and Wales has been delayed until 2025.

It is not all bad news. WEF’s Alliance of Climate Leaders highlights member companies that work with their suppliers to improve sustainability, prioritising those with shared values. Unilever has emphasised nature-based solutions and aims to have a deforestation-free supply chain by the end of 2023 in business areas including palm oil and soy. Philips, the medical equipment maker, intends to generate a quarter of its revenues from circular products by 2025 and it has joined ASML, Dell, Enel and others to share best practices in the Capital Equipment Coalition.

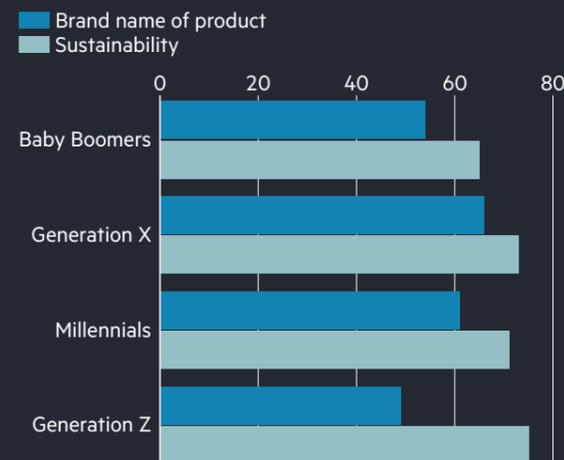
Philips takes back its used equipment and refurbishes it, selling it with warranties to those who want to buy second-hand. Recycling, especially of heavy equipment and where possible of buildings, not only reduces emissions but also slows resource depletion. This may be easier for businesses that serve other businesses. Consumers only have to answer to themselves and some may not choose to pay more to meet their values.

HCLTech, the IT services and consulting company, says client requests now include sustainability considerations on several levels. Service solutions, from logistics optimisation to product engineering, have emissions reduction as a core objective. Packaging engineering, for example, now looks at the lifecycle from production to disposal or recycling. “We identify hotspots for sustainability and how we can use substitutes to improve sustainability and recyclability as an add-on to the underlying efficiency,” says Santosh Jayaram, global head of sustainability at HCLTech.

He adds that service companies also ask for help to establish their Scope 3 emissions, the pollution created by their clients. Financial companies might require APIs (application programming interfaces) to access third party data. This could be coupled with data analysis to assess the emissions of a mortgage portfolio.

Sustainability beats out brand name of products across all generations

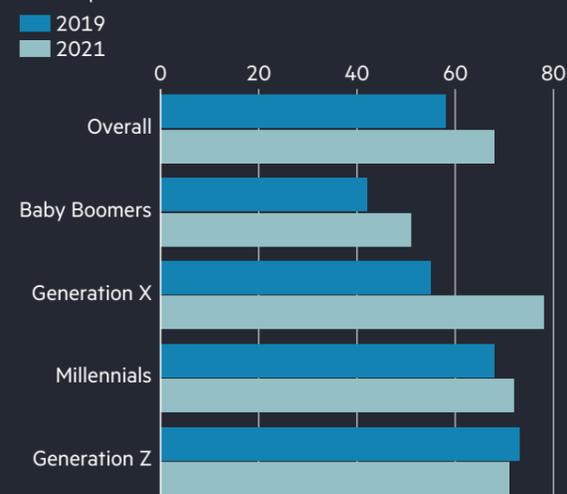
Q: How do you rate the importance of these factors when making a purchase? (% of respondents)



Source: First Insight, The Baker Retailing Center at the Wharton School of the University of Pennsylvania

Are you willing to pay more for sustainable products?

% of respondents



Source: First Insight, The Baker Retailing Center at the Wharton School of the University of Pennsylvania

Sustainability challenges and their solutions

While some people call for mitigation over adaptation, others say that prevention is always better than cure. In most sectors mitigation – for instance through carbon capture or recycling – is less desirable than stopping pollution and waste at source. An example is the second-hand textile market. This may appear to be a good solution to a problem created in the first world but it comes with issues of its own, including 40 per cent of clothes sent for recycling being burnt, dumped or simply discarded.

By using renewables and alternative or biodegradable materials, companies can limit the need to deal with legacy waste and so prevent existing problems from becoming worse. Below, we outline some of the process and material technologies that aim to address the most severe sustainability challenges.

• Energy and emissions

Significant progress has been made with renewable energy in the past 10 years, helped by government subsidies to promote technologies such as solar and wind power. The sector is an example of what can be achieved but progress is still insufficient to meet climate targets. The IEA said in 2021 that no new unabated coal projects should be approved if the world was serious about reaching net zero emissions. China alone permitted two new plants a week in 2022, according to the Centre for Research on Energy and Clean Air.

Some people put their faith in carbon capture, biomass or hydrogen to solve the problem and so avert the need for widespread behavioural change. This seems too optimistic. Experts such as Allwood say new technologies cannot be deployed at the speed and scale needed to solve the problem on their own. For starters, he says, companies must halve their use of resources and source all electricity from non-emitting generation.

Absolute Zero, a report co-authored by Allwood, sets out how to achieve the UK's emissions goals using existing technologies. He says new developments will be at best a bonus but he discounts CCS (carbon capture and storage) playing a major part. "We've been talking about it for 20 years and there isn't any at significant scale," he says.

Prevention

One often-overlooked area relevant to all modern companies is the energy used by data centres. These process everyday transactions from online banking to food deliveries to emails. They account for 1 to 1.5 per cent of global electricity use and 1 per cent of greenhouse gas emissions, says the IEA.

Lenovo, the electronics company, says the most sustainable solution is also the most economical: reducing the power used by data servers will lower both costs and emissions. It points to its Neptune liquid cooling as a way to enhance data efficiency and also advocates timely updates to hardware. It says new servers can sometimes replace 10 to 20 old ones. To ensure that this is a sustainable option, companies must also efficiently dispose of used hardware (see e-waste, below).

Intel, the semiconductor maker, also stresses the importance of updating equipment. It claims its new data centre processor can reduce CO₂ emissions by 60 per cent while also lowering energy consumption.

There are some simple ways to tackle emissions. One easy win is to commit a company to using 100 per cent green electricity. Another is to reduce business flights. While aviation accounts for only 3.5 per cent of total emissions, relatively few people fly. Companies could do far more in this area and Travel Smart lists the businesses that are especially tardy. In terms of overall aviation emissions the tourism sector needs to address its contribution considering, for example, the volume of flights that take regular tourists to the countries and coastal areas that will be most affected by climate change. Transport-related CO₂ emissions of the tourism sector make up 22 per cent of emissions from all transport, says the UN World Tourism Organisation.

Other major sources of climate-damaging emissions are cement and steel used in construction and heavy industry but alternatives are emerging.

SSAB of Sweden has developed a fossil-free "green steel" which Volvo has used to build heavy equipment. This material should be available commercially in 2026 but its energy use is still higher than for recycled steel. Allwood's research group has come up with a tooling solution to make car bodies. "The car is almost a byproduct of scrap creation", he says, pointing out that nearly half the steel used is wasted in the shaping process. Allwood's method reduces the offcuts by three-quarters.

On the cement side there is progress, too. This year Cement 2 Zero, a UK project led by the Materials Processing Institute, said it was ready to trial zero-emissions cement on an industrial scale. The method recycles concrete into a cement harder than Portland as part of the steel recycling process. Allwood, one of three Cambridge engineers behind the project, calls the solution "a miracle".

More efficient building design can help and Allwood has contributed here, too, with software that can calculate optimal designs for materials usage. Buildings also add to emissions through their everyday operations. The IEA says that in 2021, the operation of buildings accounted for 30 per cent of global final energy consumption and 27 per cent of energy sector emissions. Tellingly, the energy demand for space cooling rose by more than 6 per cent year on year.

Designing a digital twin of a building in advance of construction can optimise both material use and its emissions profile. Sensors and energy monitoring help to cut consumption. A way to repurpose energy to power hot water systems is already available and this and other initiatives are showcased in the Schroders building in London.

Consumers can have a direct effect on energy usage beyond lobbying and choosing the best companies to buy from. Equiwatt helps households save money and reduce emissions with a monitoring app that advises them to switch off appliances and steers them away from drawing too much energy at peak times.



• Plastics/packaging waste

In its 2022 report The Price of Plastic Pollution, the Minderoo Foundation estimated that the cost of dealing with plastics was equivalent to the total revenue of the plastics industry. It said corporate liabilities from litigation between 2022 and 2030 could exceed US\$100bn. In 2020 Carbon Tracker put the global annual cost of plastics usage at \$1,000 a tonne, which takes into account emissions, ocean pollution and waste collection. Some 40 per cent of plastic waste ends up in the environment.

Mitigation

Most mitigation strategies depend on recycling but the OECD says this deals with less than one-tenth of plastic waste worldwide. Plastic consumption has quadrupled in 30 years. Twelve per cent of global oil supply is used to create plastics and this accounts for 3.4 per cent of greenhouse gas emissions. While many governments now mandate levels of recycled content, the market has not caught up. It may still lack the incentive to do so: in the UK Planet Tracker says plastic-makers would rather pay a tax of £200 a tonne for missing the targets for recycled content than use recycled resin, which tends to be costly as demand is high relative to supply. Companies could standardise packaging materials if they put their branding on shrink wrapping, says Planet Tracker. This would allow fast-moving consumer goods (FMCG) companies to buy recycled resin, the colour of which can be inconsistent, and print their identity on the outside of the container. While it would prove good intent on the part of makers, it can still be fiddly. It requires the consumer to separate the sleeve from the container, or the sleeve and container to be the same kind of resin.

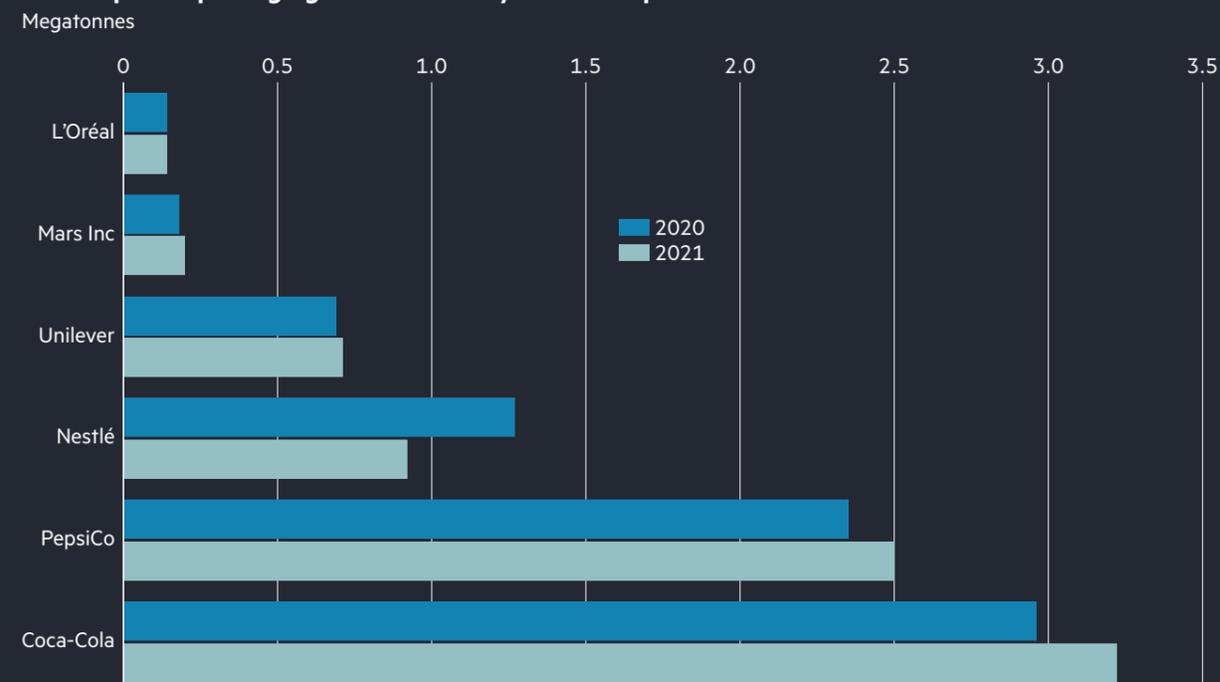
Metaspectral, a Vancouver company, has a novel recycling sorting technology that is already in use. Other groups use AI to identify types of plastic but Metaspectral's imaging process sorts items by the material composition seen in each pixel rather than by shape. Its neural network runs at high speed to process vast amounts of data. Its technology sees through transparent items to identify different materials in a stack of objects. It can differentiate between grades of the same material and sort multi-layered and black plastics. "It is hard to implement pure sorting because people put things in the wrong bins," says Francis Doumet, chief executive of Metaspectral. "Our aim is to bring up the purity to make the recycled product more appealing to manufacturers of new packaging."

Prevention

While dealing with plastic in circulation is one problem, alternatives can ensure that the plastic mountain does not grow. New materials include packaging made of mushrooms, which is biodegradable or recyclable. Custom-made containers can be grown to shape in seven days and are compostable at home or will rot in the sea within 45 days. These cost a fraction of the price of foam moulding, according to Ecovative, the company behind the technology. Even with these qualities, it can be stored for 30 years and is flame resistant.

Mushrooms are not the only biodegradable option. Other companies such as Kelpi provide seaweed alternatives, while PhycoWorks, one of several biomanufacturing partner companies of UK Research and Innovation, a government body, combines AI with algae production. Origin by Ocean of Finland harvests harmful algal blooms and farmed seaweed to use as a chemical feedstock in place of fossil fuels.

Annual plastic packaging volume used by select companies worldwide



Source: Ellen MacArthur Progress Report 2021 and 2022, Planet Tracker

Sustainability challenges and their solutions (continued)

• Textiles

Like plastics, textile waste is a problem. The impressive stock monitoring practices that enable fast-fashion producers to respond to demand thrive on a rapid replacement mentality. As Lex highlighted in December 2022, fashion brands produce twice as much clothing as they did 20 years ago and some 50bn items are estimated to be thrown away within one year of production. Textile waste per head has grown by 50 per cent over 60 years. While the supply chain is increasingly efficient, the returns chain is not as sophisticated – but managing returns is an important part of overcoming waste. Many retailers still find landfill the easiest and most economical solution. In 2022, according to the National Retail Federation, consumers returned \$816bn worth of retail merchandise, a return rate of 16.6 per cent. This is almost twice the value of returned goods in 2020. Online apparel retailers fare worst, with a McKinsey survey finding that returns stood at about a quarter of sales. The survey found that reintegrating returns was not a high priority.

Prevention

Companies that can manage the flood of returns – ideally by implementing a more accurate first-time sales process – can improve the sales to returns ratio. Data collection is central to better outcomes. Gathering more statistics on the causes of returns can help companies learn about the customer and nudge them towards personalised recommendations. Better use of merchandising figures – looking at the flops of the previous season and understanding why these happened – can help to avoid product mistakes. Online pop-ups that query purchases of multiple sizes in the same cart, or an offer of advice on sizing, can pre-empt returns. Every online retailer should have a strategy in place to assess returns as a proportion of sales and tactics to deal with that. Augmented reality shopping tools may help but the efficiency of these is yet to be proved.

Mitigation

In Europe in 2020 textile consumption had the fourth highest environmental impact, with the third highest impact on water and land use and the fifth highest for raw materials usage and emissions. The European Environment Agency champions a circular approach to reducing textile waste, including designing for durability and repairability, recycling and reuse.

While addressing the waste issue before it happens is the ideal, biodegradable materials whose manufacture uses less water and has a lower carbon footprint will play a part. Microfibre pollution, now found all over the planet, is largely caused by washing clothes made of synthetic fibres, which account for more than two-thirds of materials used in textiles. Tencel, a synthetic material mostly from eucalyptus, is biodegradable. Bamboo is also highly versatile, easily grown and absorbs carbon emissions. Bakong, found in south-east Asia, is the latest plant to show promise in fibre production.

• E-waste

The Global E-Waste Monitor 2020 reported that nearly 54mn metric tonnes of electrical products were discarded in 2019, up by a fifth in five years. In part this is being addressed through the Right to Repair consumer movement which is persuading companies to design for longevity. Despite this the amount of waste is still forecast to reach 74mn tonnes by 2030.

Companies that wish to tackle the negative effects of their businesses, electronic or any other kind, should look at the procurement network devised by the Ellen MacArthur Foundation. This sets out how to reduce waste and pollution, keep products and materials in use at the highest possible value and regenerate natural systems.

Despite greater awareness of the importance of circular principles, Right to Repair has yet to make headway on the disposal of commercial hardware. Huge data centres routinely scrap hard disc drives (HDDs) that could be repurposed and reused. This makes companies that use their services, for cloud storage for instance, indirectly responsible for a large volume of e-waste.

The number of HDDs shredded every year could be 70mn, according to the US National Renewable Energy Laboratory. It estimated that 60 per cent of scrapped drives could be reused, boosting economic value and creating far less CO₂ emissions than even the best recycling outcomes. Greater trust in the data-wiping process would improve reuse rates, says NREL.

Fast fashion: garment varmint

Waste generated by material 1960-2018 (tons mn)



Source: US EPA

Companies working for sustainability

With rising interest rates, those who conduct innovation and research face increased costs and financing scarcity. Despite this the sector still teems with companies pushing on all fronts of sustainability. TechNation says particularly active areas include energy, farming and food, the circular economy, mobility, the built environment, manufacturing, carbon accounting and GHG removal. Despite the poor record of carbon capture, start-ups such as CarbFix and Climeworks in Iceland hope to innovate to deal with emissions.

New ideas are showcased by the Ellen MacArthur Foundation. Launched this spring, the foundation's Circular Startup Index features 500 companies on a website that is searchable by industry, customer type and geography.

One area where emerging companies have made a difference is in helping larger groups to measure, assess and devise plans to minimise their impact.

Monitoring and measurement are key

Assessment of plans is critical to making progress on sustainability targets. Companies should have a sustainability owner at board level and key performance indicators that monitor outcomes against targets. Without building green data into KPIs it is hard to persuade employees to care. Swiss Re has a solution: when its executives travel, the company deducts an internal carbon price from divisional bonus pools.

There are more universal approaches that aim to help companies assess their sustainability impact. The international Task Force on Nature-related Financial Disclosures, along with the Taskforce on Climate-related Financial Disclosures, provides frameworks to assess progress using a standardised approach. This makes it easier for investors as well as consumers to measure outcomes.

David Craig, co-chair of the TNFD, says nature is not a free resource and that only by putting a value on natural resources can we know the true cost of things. Carbon is measurable but so are the 34 biomes: the areas of land or water with distinct ecosystems. This helps companies understand where to focus their efforts. UBS, Kirin and Axa are among those that now use this system.

Hank Paulson, the former US treasurer and chair of the Paulson Institute, also advocates for a valuation to be put on pollinators and healthy soils so that we can quantify the benefits of nature and better understand that they are not free.

Future trends

Given the reputational significance, winning companies are likely to be those that manage their impact holistically, keeping a circular economy in mind from the moment a product is conceived. Better products will be those that can be repaired or as a last resort recycled. Companies that are responsive to these consumer demands will gain market share.

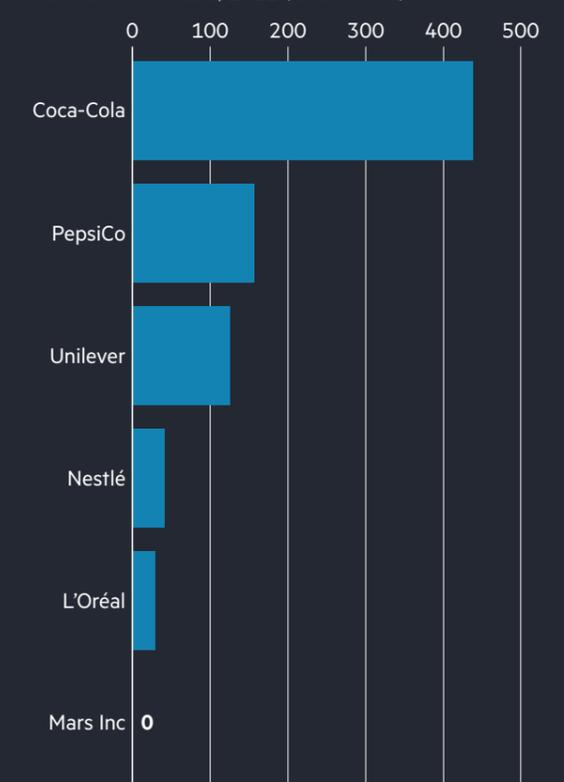
Offering products that are disposable or that have built-in obsolescence is now unacceptable. While designing to enable repairs may not be profitable, governments and consumers demand it. Companies will have to accept this.

Above all, companies must keep in mind that addressing climate change can bring opportunities. If all homes are retrofitted for energy efficiency, for example, this could create a \$50bn industry. The materials shortage alone will necessitate new methods of manufacturing and construction, presenting opportunities for those that can innovate. UK companies working in this area are backed by the Catapult Network, which accelerates research in areas from decarbonisation to biodiversity conservation.

Finally, the issue of product returns is likely to gain greater significance and publicity. Even if consumers expect returns to be facilitated, at some point the methods used – and the waste – will come back to bite. At present consumer choice and flexibility comes at the cost of piles of returned goods that are not resold. Like fast-fashion landfill, the issue of product returns – perhaps the most unrecognised impediment to sustainability – will need to be addressed if we are to achieve a truly circular economy.

Leading FMCG companies consumed 793,000 tonnes of PCR plastic in their packaging in 2021

PCR content volume, 2021 ('000 tonnes)



Source: Ellen MacArthur Progress Report 2021 and 2022, Planet Tracker

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Premium Member

How tech can help build trust and eliminate greenwashing

Santhosh Jayaram, global head of sustainability, HCLTech

The effects of climate change continue to wreak havoc. After ringing the alarm bell long ago, with a demand that more is done to protect the environment, several organisations have accelerated their efforts to try to achieve a sustainable future. Not every initiative will protect the environment: some are simply painted green to hide unsustainable practices. A popular term for this is “greenwashing”.

While big data, artificial intelligence, machine learning and other technologies make IT one of the significant contributors to global energy consumption, such technology will also play a big part in telling the difference between bona fide green claims and greenwashing, while building trust and transparency. Here's how these technologies will help green activists, sustainability specialists, environmentalists and climate experts.

Artificial intelligence

Controversy's child, artificial intelligence, tops the list. AI's carbon footprint may be high but this does not take into account its energy-saving capabilities, which are considerable.

The productivity and efficiency it brings across industry is supplemented by how it will help people understand the difference between green claims and greenwashing. With natural language processing (NLP), greenwashing can be detected early. Reliable, timely and comprehensive insights into green claims will both identify related risks and generate ESG alerts.

Big data analytics

Of the 17 UN sustainable development goals (SDGs), SDG 13 calls for “urgent action to combat climate and its impacts”. Climate change is the greatest challenge we face today. This is where big data analytics will be of use. These give organisations real-time insights of their value and supply chains. Such understanding – with the ability to take action – will ensure efficiency and visibility. This is essential to a company that wants to improve its sustainability posture while eliminating any chance of being accused of greenwashing. Predictive algorithms combined with machine learning and AI will help companies utilise their data to become more sustainable. Green data will help to optimise energy management and resource use, reduce carbon dioxide emissions derived from production, anticipate repair needs and replace machinery in good time.

A special data project is Copernicus, Europe's satellite-based Earth-observation programme. This calculates the influence of rising temperatures on river flows and provides figures to help optimise water resource management, biodiversity, air quality, fishing and agriculture.

Other such projects include the US Environmental Protection Agency's stream catchment data set project, Microsoft's life-on-Earth project that plans to simulate the entire biosphere and Aqueduct, which analyses water quality and quantity and makes interactive risk maps. Two others are the UN's Global Forest

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Change that calculates deforestation with high-res satellite imagery and the Danger Map that determines pollution levels. Big data applied to the environment introduces transparency while improving progress on the SDGs. This information will guide consumers towards more sustainable behaviour while creating sustainable value chains.

Blockchain

This is a decentralised or distributed ledger where data in the form of transactions or records are stored. Scores of transactions are added in one block and each new block is linked to the previous block, creating a chain in which every participant holds a copy of the network ledger.

This “single source of truth” will increase trust among participants. Blockchain brings the “smart contract” concept to the table with transparency along the entire supply chain. Companies using it will be able to trace a product from its point of origin to its current location, making way for sustainable consumerism.

With a variety of use cases and the concept of carbon credits, blockchain will help organisations define the difference between effective carbon offsets and greenwashing. It will eliminate misleading facts that are sometimes presented when an organisation claims that it invests in sustainability.

It is important to direct customers to not only understand what they buy but also to make the best out of their product and tell them how to return the packaging.

Besides reducing the transaction cost related to verification, blockchain brings transparency to retail. The aim must be a complete ecosystem where information is not only available but easy to understand and consumable.

Sustainability as a business priority

Companies need to prioritise sustainable initiatives if they are to survive and thrive. Employees, customers and investors now expect green claims to be tangible and measured. There are also economic perks attached to moving to the green side. Governments are also making regulators stronger. The UK Digital Markets, Competition and Consumer Bill, for example, is likely to drive down misleading environmental claims, using fines of up to 10 per cent of global turnover for a breach of consumer law. Even the Advertising Standards Authority (ASA) has started cracking down on greenwashing in advertising, issuing reprimands to global companies.

Sustainability is now a business priority. Increasingly it will be a benchmark for every successful business. The tools and technologies are available to help any organisation carry out sustainable initiatives. Any company that continues to greenwash will damage its reputation, perhaps starting a slide into obscurity.

**HCLTech's views are separate from other premium members, the FT and the FT Tech for Growth Forum*