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The great acceleration: **Technology & Sustainability**



How technology can
help retailers win in the
sustainable economy

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Executive summary

How far could a technology-led approach take retailers towards their sustainability goals?

We have reached the point of climate emergency. 2020 was the hottest year on record. More than one million species are at risk of extinction due to climate change. COP26 was touted by many as our last chance to act. It is time for us all to step up and play our part in the most important issue in mankind's history.

Yes, we have an individual and collective responsibility to our planet, but retailers are increasingly being held to account by their customers – doing nothing is simply not an option. Finally, the sustainability movement has burst out of its shell. In 2020, despite a depressed global economy, there were record inflows into ESG funds. And whilst the global shift in outlook and capital allocation is underway, we need to move faster still to avoid the worst consequences of climate change.

Every business, whether they realise it or not, is on a journey towards sustainability. Some retailers are already relatively advanced in their journey, others are taking their very first steps; all have further to go. The journey will not be the same for everyone; for some it will mean business failure, for others it will mean innovation, prosperity, and the opportunity to emerge as leaders in the sustainable economy.

This paper investigates how retailers can accelerate their sustainability journey. We will explore the three most prominent sustainability issues for retailers right now, with a focus on how technology can play an instrumental part in progression towards critical sustainability goals.

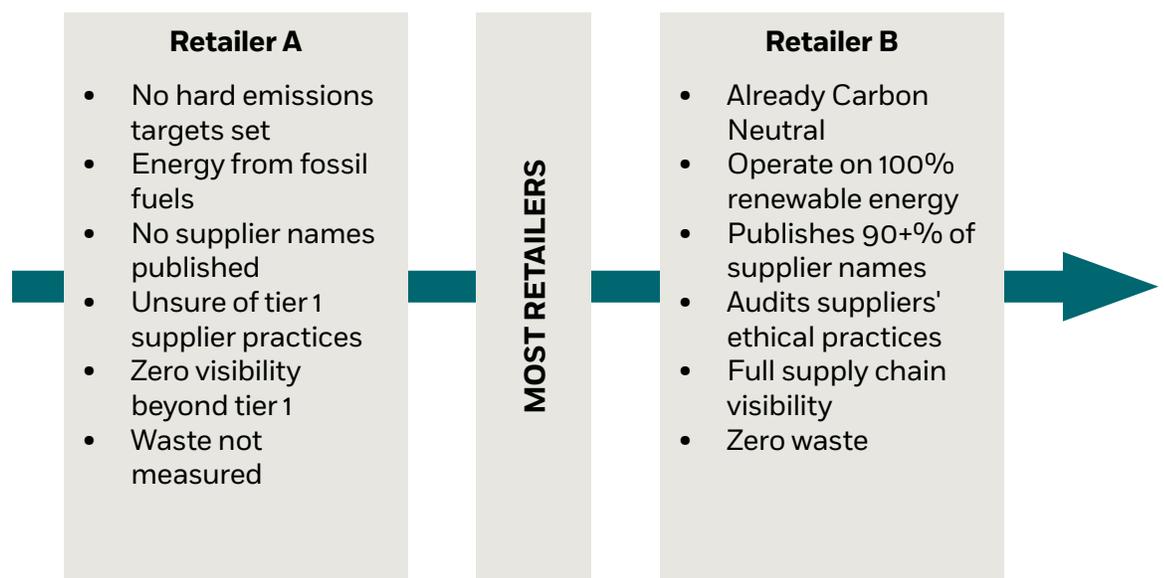


Figure 1: The sustainability journey. Which retailer does your business resemble?

Introduction

We have moved past the inflection point in the sustainability movement. Government policies, public opinion and industry leaders have all adopted a sustainability-focused approach, which means businesses that haven't are running out of time. Sustainability can no longer be a box-ticking exercise; a truly purposeful approach is imperative for long-term business viability. Therefore, investment management firms now ask retailers to disclose plans for "how their business model will be compatible with a net-zero economy". If you don't have one, now is the time to devise a plan. If you already have one, then it's time to accelerate progress, not only to play your part in supporting the well-being of our planet but to also exploit the competitive and commercial advantage sustainability can offer your business as a by-product.

A focal point of the sustainability movement is the transition to the low-carbon economy. The race to net-zero – soon to be accelerated by COP26 commitments – is well and truly underway. Some retailers are already Carbon Negative. Others have committed to hard targets in the medium-term to avoid falling behind. Within the last year 70+ UK retailers joined the British Retail Consortium's Climate Action Roadmap to make UK retail a net-zero industry by 2040. But sustainability is more than net zero. The United Nations defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs", and the 17 Sustainable Development Goals include many goals outside the scope of net zero. Increasingly, other sustainability issues are coming under scrutiny. As such, leading retailers are already making good progress towards a variety of sustainability goals – your plan cannot focus only on carbon

emissions. If it does, you are kicking the can down the road and risking being hit by punitive legislation and reputational damage, whilst failing to take advantage of the opportunities that this global shift presents.

A helping hand:

Recent innovations and technological breakthroughs are helping retailers accelerate their sustainability journeys. In fact, a technology-supported strategy seems to be one of the key enablers for retailers looking to become more sustainable. With market leading retailers and manufacturers only now realising the power of Industry 4.0 to facilitate rapid progress towards their sustainability goals, quick adoption of these technologies can still provide an early-mover advantage. However, with the big players moving fast, an immediate change is paramount.

Whilst Industry 4.0 technologies have applications across the whole spectrum of sustainability issues, the three most prominent issues we currently see for retailers are:

1. Emissions Reduction
2. Waste & Resource Management
3. Ethical Supply Chains & Sourcing

We will outline below how technology is helping retailers address these fundamental issues.

Emissions reduction

Emissions reduction is where most retailers have already made some progress towards sustainability. It is also the area where the biggest disparity exists between those who are genuinely trying to make a change and those who are ‘greenwashing’. With some retailers already carbon neutral and reaping the rewards, it is abundantly clear that only the retailers who aim to make a real difference will thrive in the long term.

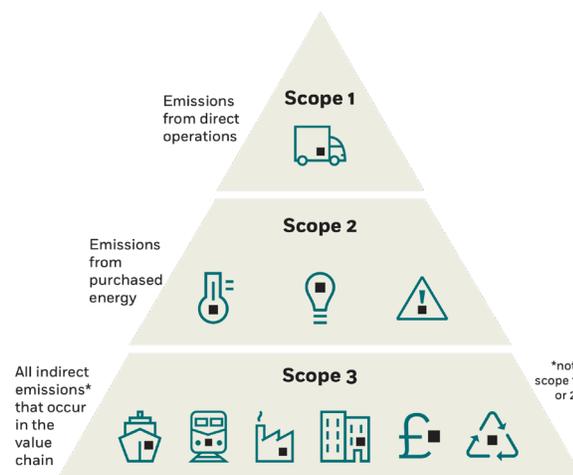


Figure 2: GHG protocol

Retailers in the UK are required to report scope 1 and 2 emissions by law, with the industry leaders also reporting their scope 3 emissions.

Given the environmental targets that are enshrined into UK Law, scrutiny will continue to intensify - particularly with respect to scope 3s. These emissions are more than five times that of companies' direct operations and are hence the obvious place to start when looking to make a reduction. Accurately measuring and reporting this data will be a huge challenge for most retailers, but a necessary one to understand where targeted reductions can be made.

Being able to make the right emissions reduction decisions relies heavily on traceability throughout the value chain. Despite this, and the many associated business advantages, only 6% of companies have full visibility into their supply chain. Utilising technologies such as Blockchain and IoT can have a significant impact; one study finds that Blockchain utilisation has increased supply chain transparency for manufacturers by nearly 50%¹. Having accurate knowledge of all the steps in the supply chain is the starting point for scope 3 reductions. At a more advanced level, IoT devices automatically capture and aggregates the emissions data from the supply chain in real-time, which can be stored on the Blockchain. Having this high-level data recorded facilitates effective emissions reduction decisions. Not only can implementing these technologies help to identify areas where emissions reductions are possible, but the associated efficiency gains will themselves help to cut carbon by streamlining operations. As an aside, it is important not to confound Blockchain and Bitcoin here. Recent highlighting of the energy inefficiency of Bitcoin has referred to issues relating to the Proof-of-Work style Blockchain network that it runs on. However, there are many other types of Blockchain network - designed entirely differently - that do not share these problems.

Regarding scope 1 and 2 emissions, intelligent energy management systems have proved successful in making significant reductions, with up to 29% energy consumption saved in a single building. Such systems constantly collect data on energy usage and automatically optimise, improving efficiency and thus reducing energy consumption and saving costs.



The returns process: a load of rubbish?

The reverse logistics process is notoriously emissions and waste intensive, generating 15 million metric tons of CO₂ and 5 billion pounds of landfill waste each year in the US alone. Increased online shopping, accelerated by the COVID-19 pandemic, is exacerbating the problem, leading to the highest ever rate of returned items. Improved customer experience at the point of purchase can mitigate against this.

For example, integrating augmented reality can reduce the number of returns by 25% which has a significant impact on scope 3 emissions and waste. The sustainability upsides of technologies that reduce returns are important to consider, alongside the benefits to customer experience. Moreover, for the proportion of returns that are inevitable, the traceability benefits discussed above can decrease the associated emissions. By being able to trace and record the exact path items take in the returns process, efficiencies will surely be identified.

Waste & Resource Management

The online shopping boom was already leading to huge increases in packaging waste, which has only been amplified as the pandemic accelerated digital growth by an estimated three to four years. With over half of UK household waste still ending up in landfill, retailers and manufacturers are increasingly taking the blame. Plastic waste is particularly problematic due to recycling difficulties and the thousands of years it takes to decompose. This has led to the pressure of making single use plastics a thing of the past, a target some supermarkets in the UK have set their sights on. More regulations came into effect in the UK -the Plastic Packaging Tax became law in April 2022, with the explicit goal of reducing plastic waste and plastic pollution.

The CPG mega corporates came under pressure to reduce plastic waste after the 2019 Greenpeace clean-up revealed that they, more than anyone else, are detrimentally contributing to the plastic pollution crisis. If we are to live sustainably, it is crucial that retailers play their part by reducing their waste as much as possible. With recycling becoming a 'dirty' word, the immediate goal should be to reduce waste rather than focusing on recycling as a sticking plaster. Fresh food, fashion and electronic retailers are amongst those that should be most concerned about this pressing issue.

What can be done?

A large proportion of waste comes from clunky supply chains. The fear of being unable to fulfil demand leads to oversupply, generating a huge amount of waste. This is not a new challenge and is one of the reasons why JIT fulfilment was created. But with recent advancements in technology, industry leaders have been able to move beyond such systems. The introduction of AI and predictive analytics can help streamline operations to never-seen-before levels by predicting a surge in demand and supply bottlenecks. For supermarkets, automated markdown recommendations on perishable goods can help reduce food waste. Similar systems can inform decision-makers in the apparel industry, where generating sell-through at the optimal price point is critical in a constantly

changing market and facilitates waste cutback. Technology has revolutionised the reusing of solutions in to enable retailers to close the loop on supply chains. A closed-loop supply chain - see Figure 3 - is incredibly complex to control; keeping track of goods in this way and deciding their next step would have until recently been economically impossible. Integrating AI, IoT, GIS and Blockchain has the potential to track individual items, cost-effectively re-aggregate them and route them to profitable channels, saving waste from going to landfill. Products are already being designed to be used repeatedly, rather than being disposed of. Using technology to manage this closed-loop supply chain will be an important step for every business in the transition to the circular economy.

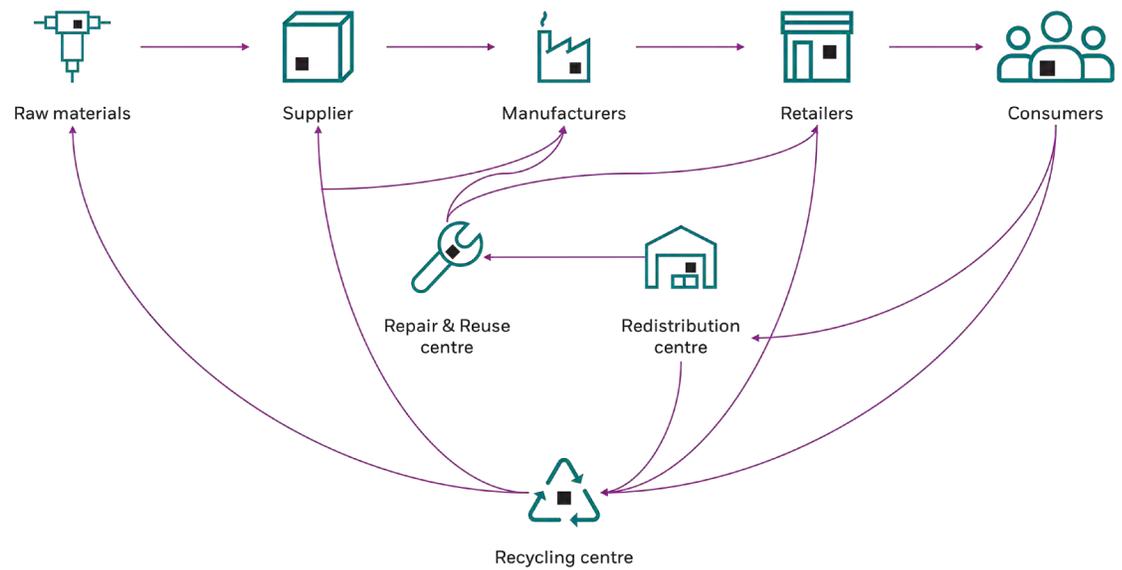
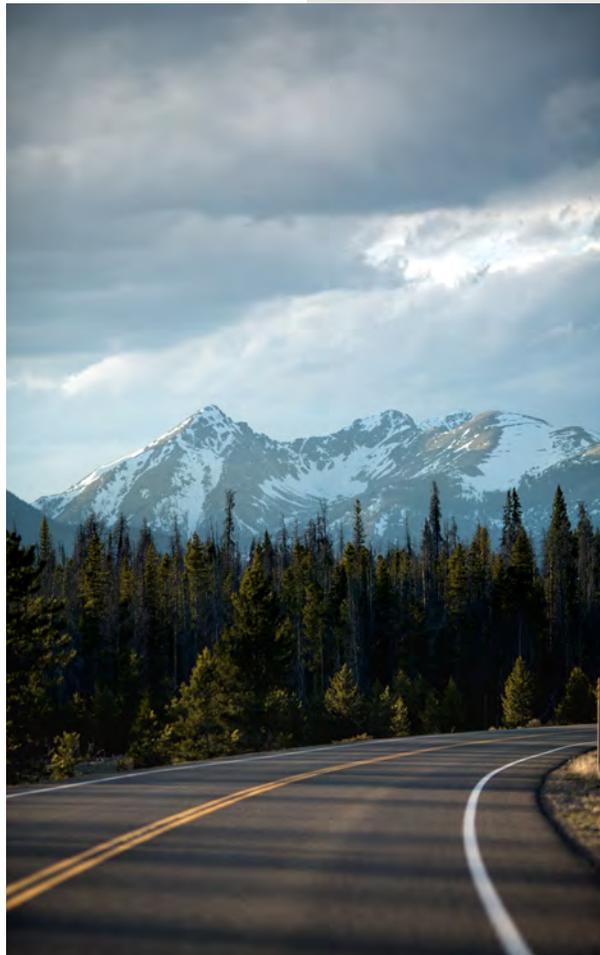


Figure 3: A simplified closed loop supply chain



Route Optimisations

Intelligent routing and truckload management systems are helping to enable the transition to the circular economy. Algorithmic route optimisation can be set to balance speed requirements and the need to minimize emissions.

This has the added bonus of driving efficiencies that positively impact the bottom line. Automated pick-up planning can make it cost-effective for companies to offer pick-up from door returns for end-of-life-cycle products.

Offering such a service increases the likelihood of reuse or repair of the product.

Sustainable supply chains

Ethical supply chains

In 2015 the Modern Slavery Act was introduced in the UK due to concerns about working practices in the global supply chains of the UK and international businesses. In June 2021, an amendment to the MSA was introduced to the House of Lords in a private members bill. If it were become law, it would enforce a minimum level of supply chain transparency. The continued publicity around the subject comes after the news in 2020, which alleged that a Leicestershire factory that supplied a UK retailer was paying workers just £3.50 an hour. The impact on share price for a retailer following this type of highly public and negative news can be catastrophic. The message is clear: governments, consumers and investors are all demanding sustainable supply chains.

The problem

The issue is that in a world of incredibly complex global supply chains, most retailers have no visibility into their tier 2+ suppliers, which is also where the greatest risks exist. It is also incredibly difficult to keep track of the working practices of a retailer's immediate suppliers, let alone those beyond them. Sourcing sustainably is crucial if we are to make progress towards the UN SDGs while protecting against reputational risk and building customer loyalty.

“The message is clear: governments, consumers and investors are all demanding sustainable supply chains”

How can tech help?

Enabling traceability through a modern, global supply chain, beyond tier 1 suppliers is a daunting challenge. Yet hyper-transparent supply chain is a concept that lies at the heart of sustainable sourcing. Retailers leading in this space are seeing tangible benefits from deploying Blockchain and RFID. RFID tags can be attached or embedded into objects, facilitating real-time tracking. Tracking each product in real-time and recording information about every individual step on the Blockchain, they can guarantee the source and route of their products.



Figure 4: Sustainability benefits of blockchain



This transparency gives consumers, investors and supply chain managers peace of mind. Using blockchain to track the products from provenance to customer is expected to contribute nearly £800bn to the global economy by 2030. As we move to an economy that puts a high price on sustainability, the value of the benefits of transparency, shown in figure 4, will skyrocket.

Once this transparency is achieved, and maintenance becomes 'business as usual,' improving supply chain practices will be easier. Imagine a standardised, central metric that scores suppliers based on their sustainability, with rankings for gender equality, health & safety, modern slavery risk, and the like. Such metrics can then be shared with those suppliers, encouraging them to focus on a more holistic set of measures beyond quality and price. Firms can then encourage suppliers to rank their suppliers in a similar way, causing a powerful ripple up the supply chain. Building this sustainability-robust supply chain will give investors and customers confidence in the long-term viability of your business.

Last but not least? The G in ESG

Governance and its role in sustainability

In the increasingly ESG-dominated world we live in, the G, for many, is seemingly an afterthought. The Environmental and Social aspects of sustainability come to most more naturally than Governance, but the latter still has a crucial role in sustainable business.

Corporate Governance refers to the rules, practices, and processes by which a business is controlled. Strong Governance with an explicit focus on sustainability should be the beating heart of a retailer that will thrive in the new economy.

Metrics that include a wide variety of Governance KPIs presented in a single source of truth dashboard can ensure that retailers have control over their Governance. Such a tool is incredibly powerful for board-level executives, allowing them to monitor their performance from a governance perspective – something that is often overlooked. Can you accurately say what your maturity roadmap looks like? Or state with confidence that you satisfy investors' governance requirements?

Such a dashboard would rely on good data acquisition, management, and delivery. The more efficient these processes, the more effective and effortless the final visualisation. Of course, the wider the breadth of data sources and the higher the quality of the data put into the metric, the better output. Getting raw data from multiple disparate systems to the point where clean data automatically flows into an easy-to-use, real-time enabled dashboard is challenging but invaluable rewarding.

"Investors view governance not as a compliance exercise, but as a key component of value creation and risk mitigation"

Harvard Law School Forum



Conclusion

The digital revolution has created huge economic growth and transformed the way we live our lives, not all of it for the better. The time is now for us to take ownership and create a sustainable future for generations to come. We have both a personal and collective responsibility to safeguard the future of our planet, and retailers and their supply chains are a big part of the solution. It is time to harness the power of technology to make real progress toward sustainable development goals.

Improvements in technology have thus far been considered from an efficiency, cost-saving and profitability point of view. However, many of these technologies are having a significant impact on the transition to sustainability. So much so, that a technology-led approach to sustainability could quickly transform a business from being a laggard to a leader in this space. Like the digital revolution, sustainability is here to stay, and the innovators who are the fastest to rise to the challenge will emerge as winners.

The sustainability implications of technology go far beyond the scope of this paper and there are hundreds of possible use cases across every industry. However, with the technologies mentioned in this report alone, retailers have the potential to make huge, rapid strides towards sustainability. Below, we've picked out some of the key applications that we've discussed throughout the report, but clearly this is far from exhaustive. If you want more information, contact UST today. We're already helping retailers around the globe, let's have a chat about how we could support you in your sustainability journey. This is a change we're all invested in - let's make it happen.



Emissions Reduction

1. IoT capability to accurately measure and aggregate carbon emissions data.
2. Blockchain to record emissions data ensuring traceability through the supply chain.
3. Intelligent emissions management systems to reduce energy consumption.
4. POS technology that reduces returns, such as augmented reality.

Waste and Resource management

5. AI and predictive analytics to streamline supply chains and reduce waste.
6. AI and IoT to close the loop on reverse supply chains.
7. Intelligent route management systems to facilitate recycling pickup from consumer doors.

Ethical Supply chains and sourcing

8. Using Blockchain and RFID to create hyper-transparent supply chains.
9. Using sustainability metrics to rank suppliers and ensure ethical practices.

Governance

10. Collecting and analysing data on Governance KPIs to facilitate the transition toward sustainability.

About us

For more than 20 years, UST has worked side by side with the world's best companies to make a real impact through transformation. Powered by technology, inspired by people and led by our purpose, we partner with our clients from design to operation. Through our nimble approach, we identify their core challenges, and craft disruptive solutions that bring their vision to life. With deep domain expertise and a future-proof philosophy, we embed innovation and agility into our clients' organizations—delivering measurable value and lasting change across industries, and around the world. Together, with over 30,000 employees in 30+ countries, we build for boundless impact—touching billions of lives in the process.

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**Core
Values**

Humility
Humanity
Integrity

OUR HISTORY

- Born digital in 1999
- HQ Aliso Viejo, CA, USA
- 30,000+ employees
- 140+ Fortune 500 and Global 2000 clients

GLOBAL & LOCAL PRESENCE

- 30+ countries

WE'RE RECOGNIZED

- 2022, Great Place to Work certified in the USA, UK, Mexico, India and Malaysia
- 2022, Top Employer Institute 'Blue Seal' certified in North America and APAC
- 2022, Top 100 technology companies across the globe by Technology Magazine
- 2022, US CIO 100 - IT organizations for driving digital business growth
- 2022, BIG innovation awards by the Business Intelligence Group for CyberProof
- 2022, Everest Group PEAK Matrix Top 15 Engineering services provider

Together, we build for boundless impact

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